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EXECUTIVE SUMMARY

Coralville Lake is a large, multi-purpose lake built by the U.S. Army Corps of Engineers (Corps) in the east-central part of Iowa along the Iowa River. The project includes 25,000 acres of land and water. Authorized project purposes include flood control, fish and wildlife management, water supply, and recreation. The Corps operates 12 recreation areas ranging from full service campgrounds to day-use facilities within the land acreage above the normal pool. In addition to these 12 areas, the Corps outgrants six more areas to organizations such as the Iowa Department of Natural Resources (IDNR), the University of Iowa, and private concessionaires for the provision of recreational services. Each of the outgrant areas provides a combination of recreational services and facilities desired by the public but not provided by the Corps.

Since the creation of the project in 1958, lands have been made available to nonprofit organizations under a lease for recreational purposes. In the past, the Corps has had up to three outgrants to nonprofit organizations at various locations around the lake at one time. Currently, there are no outgrants to nonprofit organizations. The project's original Master Plan dating from 1961, with subsequent revisions in 1964 and 1977 (current approved version), allocates project lands for nonprofit recreational use. The proposed lease site is on land that has previously been leased to other nonprofit organizations for similar nonprofit recreational use and purposes. Very little opportunity exists within Corps managed or leased recreation developments to meet the needs of nonprofit group activities.

Corps administrative policy requires that land use decisions should:

- provide the best possible combination of responses to regional needs, resource capabilities and suitabilities, and expressed public interests and desires consistent with authorized project purposes;
- contribute toward a high degree of recreational diversity within the region;
- emphasize the particular qualities, characteristics, and potentials of the project; and
- exhibit consistency and compatibility with national objectives and other state and regional programs.

The purpose of this Environmental Assessment (EA) is to evaluate alternatives, assess the potential impacts of the alternatives, and determine a preferred alternative for the 106-acre site that was formerly leased to the Girl Scouts.

The project area is located along Coralville Lake, approximately two miles from North Liberty. Access to the site is via Scales Bend Road. The lease to the Girl Scouts expired in 1990, and over the intervening years the facilities have deteriorated and understory species have overgrown the former campsite (Camp Daybreak).

Alternatives evaluated in this EA include:

1. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization, as proposed in the Muslim Youth Camps of America (MYCA) application;
2. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization at a reduced level of development and use;
3. Low density recreational day use of the former Camp Daybreak area under administration by the Corps (no lease); and
4. No action-no current plans for development or lease.

In addition to the four alternatives identified above, alternative sites at Coralville Lake were considered for group recreational use and development by a nonprofit organization, as proposed in the MYCA application. An evaluation of all lands at Coralville Lake, designated as Recreational-Intensive use or leased lands for nonprofit group use in the 1977 Master Plan, was performed by the Corps. The criteria

used in this evaluation included minimum size requirements, available acreage above flood pool, existing public road access, natural resource impacts, acceptable lake/beach access, and adequate forest cover. After screening for appropriate zoning, minimum size, and acreage above the flood pool, the following areas remained for consideration: the former Camp Daybreak site, a portion of North Point, South Point, and West Point. West Point was eliminated due to a lack of existing public road access. South Point was eliminated for increased natural resource impacts due to the undisturbed nature of the site. No remaining sites were eliminated for lack of lake/beach access. A large portion of North Point was previously an agricultural lease and was eliminated for lack of adequate forest cover. Only the former Camp Daybreak site met all the criteria for further development/lease consideration. Therefore, additional alternative site analysis was deemed unnecessary.

Alternative 1: MYCA Lease. This alternative consists of a level of use as represented by the application submitted by the Muslim Youth Camps of America (MYCA) to establish a youth camp and conference retreat center on the project site. The purpose of MYCA, as laid out in the Articles of Incorporation, is to serve as a charitable, educational and religious organization dedicated to the following objectives:

- to establish a cultural, educational and religious membership organization for support of the youth of the Islamic faith; and
- to acquire, establish, operate and maintain a summer youth camp or camps to provide multicultural, educational and religious opportunities for youth of the Islamic faith.

To meet the above objectives, MYCA seeks to establish the proposed facility as a unique, international, multicultural, educational experience that is grounded in the outdoors and reinforced through classes in language, computers, and history. Though the facility is meant to provide a supportive and secure environment for Muslim children in particular, it is also meant to be a camp where non-Muslim children in general can experience cultural diversity uncommon to U.S. youth activities.

As proposed by MYCA, the facility would essentially perform two separate functions:

- serve as a camp for Muslim and non-Muslim youth during the summer months; and
- serve as a retreat and conference facility for the remainder of the year.

Key elements of the MYCA proposal include the construction of 10 cabins, 12 tent camping platforms, a caretaker's residence, a 70'x 250' central lodge building with classrooms and facilities for dining, general meetings, and a camp office (also to be used as a conference/retreat center), a 200'x 50' beach, an access road, 66 on-site parking spaces, a boat dock. Water use requirements call for the use of more than 8,800 gallons per day (gpd) with associated on-site water storage and wastewater treatment.

Use of the facility is anticipated to consist of up to120 campers and 16 staff per day for 10 weeks during the summer months and up to 4,000 users over the course of the remaining year. Planned uses include the following:

- camp lodging and indoor activities,
- swimming, boating and fishing areas,
- educational trails and facilities,
- forest meditative isolation, and
- conferences, seminars and social events.

Alternative 2: Reduced Use. This alternative consists of the issuance of a lease to a nonprofit organization at a reduced level of use. The selection of a 50% reduction in development from Alternative 1 as a basis for Alternative 2 was done in order to establish an intermediate level of use, which did not include a retreat/conference center. This effectively reduced the project footprint and the physical and non-physical impacts relative to Alternative 1 making it similar to the footprint of the former Camp Daybreak facility. The applicant (i.e., a nonprofit organization such as MYCA) is not currently known. Consequently, the precise improvements are likewise not currently known. However, for the purposes of

this assessment, Alternative 2 was established to approximate a 50 percent reduction in usage intensity compared with Alternative 1.

Key elements of this proposal are assumed to include the construction of five cabins, five tent camping platforms, a 40'x 60' lodge, a 100'x 50' beach, an access road, and 33 on-site parking spaces. Water use requirements would call for the use of more than 4,100 gpd with associated on-site water storage and wastewater treatment.

Use of the facility would be anticipated to consist of up to 61 campers and staff per day for 10 weeks during the summer months with intermittent recreational and educational use by up to 1,500 users over the course of the remaining year. Planned uses might include the following:

- camp lodging and indoor activities,
- swimming, boating and fishing areas, and
- educational trails and facilities.

Alternative 3: Alternate Use. Under the Alternate Use Alternative, the site would not be an outgrant area and would be limited to passive day use recreation, outdoor educational activities, hiking, orienteering, rock climbing, and wildlife management. Potential improvements to the site could include an interpretive trail system, the addition of five parking spaces, a vault toilet facility and the removal of all structures associated with the former Camp Daybreak (with the exception of the existing picnic shelter and the existing well). Specific recreational activities that would be permitted on-site include shoreline fishing, hiking, birding, and wildlife observation. Swimming and boating would be permitted under this alternative; however, no beach would be constructed. Additional planned uses may include the following:

- natural resource management, and
- educational trails and facilities.

Alternative 4: No Action-no current plans for development or lease. Under the No Action Alternative, the site would not be the subject of any planned use or special management. The site would remain in its present condition of limited passive recreational use by local and regional residents.

Summary of Findings. Each alternative was evaluated using the following impact criteria:

- Natural Resources
- Wetlands
- Sensitive Species and Unique Habitats
- Water Quality
- Regulatory Floodplains
- Prime and Unique Farmlands
- Soils and Geology
- Demographics
- Community Cohesion
- Local Tax Base
- Land Use
- Recreation
- Property Values
- Public Safety
- Regional and Local Employment
- Regional and Local Incomes
- Environmental Justice
- Local Infrastructure Resources
- Cultural and Historic Resources
- Aesthetics and Visual Impacts
- Noise
- Hazardous and Toxic Wastes

The analysis of all impact criteria indicated that there would be no significant environmental impacts as a result of the implementation of any of the four alternatives. However, while not viewed to be significant, there is a recognizable difference in the magnitude of impact between each alternative. In general, the magnitude of impact on the site and the surrounding infrastructure is successively reduced from Alternative 1: MYCA Lease to Alternative 4: No Action. Alternatives 1 and 2 were also found to be consistent with the Master Plan's designation of the use of the site as high intensity recreation. However, Alternative 2: Reduced Use was recognized as offering a lower level of recreational benefit as compared to Alternative 1. In contrast, Alternatives 3 and 4 provide some recreational use of the portions of the site. However, these alternatives do not meet the criteria for high intensity recreational use of the premises and do not serve the intended use of the land as set forth in the Master Plan.

Preferred Alternative

Alternative 1: MYCA Lease is recommended as the preferred alternative. This alternative was selected for the following reasons:

- finding of no significant impact to environment,
- consistent with project purpose and need,
- consistent with the Corps' Master Plan and designated land use for site, and
- provides increased recreational benefit to the greatest number of users.

However, it should be noted that MYCA or any other applicant proposing the level of use described under this alternative would be required, as a condition of a lease agreement, to obtain all appropriate and applicable approvals and permits including the following:

- Water Quality Certification (Section 401 permit) from the Iowa Department of Natural Resources (IDNR),
- Section 404 permit from USACE, Rock Island, and
- The issuance of a variance from IDNR for wastewater treatment facility siting.

The MYCA Lease (and Reduced Use Alternative) does not meet current state standards for location of wastewater treatment facilities. Development of this alternative would be contingent on a change in state standards (IDNR is currently reviewing these standards) or a variance in the buffer zone requirements. In the event that the IDNR does not issue a variance for either Alternative 1 or 2, alternative wastewater development proposals that meet the IDNR wastewater treatment requirements should be considered.

1.0 BACKGROUND

1.1 Project Authority

The proposed project is part of the Coralville Lake project, which was promulgated under the authority of Section 4 of the 1944 Flood Control Act, as amended (Sec. 4, 59 Stat. 889, as amended; 16 U.S.C. 460d) and the Code of Federal Regulations, Title 36, Chapter III, Part 327.30.

1.2 Purpose and Need

Coralville Lake is a large, multi-purpose reservoir built by the U.S. Army Corps of Engineers (Corps) in the east-central part of Iowa along the Iowa River. The project includes 25,000 acres of land and water. Authorized project purposes include flood control, fish and wildlife management, water supply, and recreation. The Corps operates 12 recreation areas ranging from full service campgrounds to day-use facilities within the land acreage above the normal pool. In addition to these 12 areas, the Corps outgrants six more areas to other organizations such as the IDNR, University of Iowa, and private concessionaires for the provision of recreational services for public enjoyment. Each of the outgrants provides a combination of recreational services and facilities desired by the public but not provided by the Corps.

Since the creation of the project in 1958, lands have been made available to nonprofit organizations under a lease for recreational purposes. In the past, the Corps has had up to three outgrants to nonprofit organizations at various locations around the lake at one time. Currently, there are no outgrants to nonprofit organizations. The project's original Master Plan, dating from 1961 with subsequent revisions in 1964 and 1977 (current approved version), allocate project lands for nonprofit recreational use. The proposed lease site is on lands that have previously been leased to nonprofit organizations for nonprofit recreational use and purposes. Very little opportunity exists within Corps managed or leased recreation developments to meet the needs of nonprofit group activities.

Corps administrative policy requires that land use decisions should:

- provide the best possible combination of responses to regional needs, resource capabilities and suitabilities, and expressed public interests and desires consistent with authorized project purposes;
- contribute toward a high degree of recreational diversity within the region;
- emphasize the particular qualities, characteristics, and potentials of the project; and
- exhibit consistency and compatibility with national objectives and other state and regional programs.

The purpose of this Environmental Assessment is to evaluate alternative levels of use, assess the potential impacts of the alternatives, and determine a preferred level of use at the location described within this document. The purpose of the EA is not to evaluate a specific application or applicant.

2.0 PROJECT DESCRIPTION

Zambrana Engineering, Inc. has prepared this EA under contract to the U.S. Army Corps of Engineers (USACE), Rock Island District (RID), evaluating the impacts of a proposed level of use and development by a nonprofit organization, as represented by the MYCA lease application, for the use of the Corps property located adjacent to Coralville Lake, northeast of North Liberty, IA. The project area, a 106-acre site, illustrated in Figure 2-1, is located approximately two miles north of the town of North Liberty, Iowa. Access to the site is via Scales Bend Road. The proposed site was formerly leased to the Girl Scouts for camping purposes until 1990. Over the intervening years the facilities have deteriorated and understory species have overgrown the former campsite (Camp Daybreak). The EA will evaluate (1) a proposed level of development as represented by the MYCA lease application, (2) a 50% reduced level of development when compared with Alternative 1, (3) development of the area for passive recreational use and wildlife preservation and management, and (4) no action-no current plans for development or lease (leaving the site in its current condition).

Each of the alternatives will be evaluated using the following impact criteria:

- Natural Resources
- Wetlands
- Sensitive Species and Unique Habitats
- Water Quality
- Regulatory Floodplains
- Prime and Unique Farmlands
- Soils and Geology
- Demographics
- Community Cohesion
- Local Tax Base
- Land Use
- Recreation
- Property Values
- Public Safety
- Regional and Local Employment
- Regional and Local Incomes
- Environmental Justice
- Local Infrastructure Resources
- Cultural and Historic Resources
- Aesthetics and Visual Impacts
- Noise
- Hazardous and Toxic Wastes

2.1 Previous Use of Camp Daybreak

The site was leased to the Mississippi Valley Girl Scout Council, Inc. from March 1, 1966 to February 28, 1991 for a nominal fee of $1. The site was actively used during the late 1960's and 1970's, with up to 1,200 campers during the summer months. However, the intensity of use gradually diminished over the remaining years until a fire destroyed the lodge in 1990. After this fire, there was little use of this campsite and the lessee did not renew the lease in 1991.

The primary purpose of this camp was to provide Girl Scouts, and other organizations with similar beliefs and principles, the opportunity to enjoy camping, hiking, arts and crafts and nature, and to learn the principles of conservation and fire safety. Both day and overnight camping activities occurred year around. During the summer, cabins, tents and the lodge were used for overnight stays, while during the winter only the lodge was used for overnight stays, principally on the weekends.

Facilities included a 30' by 50' central lodge, a water supply well with a 5" diameter and a depth of 180', a septic system with leach field, a graveled access road approximately 0.4 mile long and 24' wide with an entrance gate, a 30' by 50' gravel parking lot, two four-stall pit toilets, a small storage shed for fire wood, a 24' by 36' picnic shelter with storage area at one end for tents, buried electric service line and water lines, eight wooden platforms for tents, a flagpole, canoe racks and several foot bridges. These facilities were concentrated on 18-20 acres in the central portion of the leased site. The remaining portions of the site were accessed via various nature paths. The lodge could house 32 campers and the tents up to 96 campers.

Water for the camp was supplied by a 5" diameter well with a pump rated at 15 gallons/minute. The camp's sewage disposal system was designed to meet or exceed the recommendations of Public Health Service Publication # 526 (revised 1967). This system included: a non-perforated 1 $^{1}/4$ " line from the lodge; a 2,500 square-foot absorption field area which contains 4" tile to a depth of 16" surrounded by pea gravel; 833 feet of 3-foot wide trench that follows the surface contour; and two septic tanks made of steel, each with a 1,000 gallon capacity.

3.0 ALTERNATIVES

Alternatives evaluated in this EA include:

1. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization, as proposed in the Muslim Youth Camps of America (MYCA) application;
2. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization at a reduced level of development and use;
3. Low density recreational day use of the former Camp Daybreak area under administration by the Corps (no lease); and
4. No action-no current plans for development or lease.

In addition to the four alternatives identified above, alternative sites at Coralville Lake were considered for group recreational use and development by a nonprofit organization, as proposed in the MYCA application. An evaluation of all lands at Coralville Lake, designated as Recreational-Intensive use or leased lands for nonprofit group use in the 1977 Master Plan, was performed by the Corps. The criteria used in this evaluation included minimum size requirements, available acreage above flood pool, existing public road access, natural resource impacts, acceptable lake/beach access, and adequate forest cover. After screening for appropriate zoning, minimum size, and acreage above the flood pool, the following areas remained for consideration: the former Camp Daybreak site, a portion of North Point, South Point, and West Point. West Point was eliminated due to a lack of existing public road access. South Point was eliminated for increased natural resource impacts due to the undisturbed nature of the site. No remaining sites were eliminated for lack of lake/beach access. A large portion of North Point was previously an agricultural lease and was eliminated for lack of adequate forest cover. Only the former Camp Daybreak site met all the criteria for further development/lease consideration. Therefore, additional alternative site analysis was deemed unnecessary.

Alternatives 1 through 4 for the former Camp Daybreak site, identified below, were evaluated in detail for purposes of this EA.

3.1 Alternative 1: MYCA Lease

This alternative consists of a level of use as represented by the application submitted by MYCA to establish a youth camp and conference retreat center on the project site (Figure 3-1). The purpose of MYCA, as laid out in the Articles of Incorporation of MYCA, is to serve as a charitable, educational and religious organization dedicated to the following objectives:

- To establish a cultural, educational and religious membership organization for support of the youth of the Islamic faith; and
- To acquire, establish, operate and maintain a summer youth camp or camps to provide multicultural, educational and religious opportunities for youth of the Islamic faith.

To meet the above objectives, MYCA seeks to establish the proposed facility as a unique, international, multicultural and educational experience that is grounded in the outdoors and reinforced through classes in language, computer science, and history. Though the facility is meant to provide a supportive and secure environment for Muslim children in particular, it is also intended to be a camp where non-Muslim children can also experience a level of cultural diversity that is uncommon in many U.S. youth activities.

As proposed by MYCA, the facility would essentially perform two separate functions:

- serve as a camp for Muslim and non-Muslim youth during the summer months; and
- serve as a retreat and conference facility for the remainder of the year.

Youth Camp

The MYCA facility would be the first Muslim summer youth camp located in the United States. The camp is being developed to provide urban minority and immigrant youth with a larger cultural experience of their possibilities in the world. The proposed camp would also acquaint youth with computers and computer-related tools, and assist the youth in developing new skills.

Retreat/Conference Center

In addition to the use of the facility as a camp for youth, MYCA proposes to use it as a retreat and conference center during the school year when youth are back in classes. The facility is proposed to be used year-round and will be actively marketed for use by regional nonprofit educational and cultural entities. In addition, there would be a central lodge that would house computer hardware and would provide classrooms that would be used for general meetings, dining, and education.

3.1.1 Planned Use

The proposed MYCA facility will have four major areas of use.

1. Camp Lodging and Indoor Activity Centers - MYCA foresees providing four-season lodging for up to 80 users/night during the non-camping season and up to 136 campers and staff counselors/night during the summer camping season. The majority of the lodging would be in 10 cabins to house campers and their staff (up to eight occupants/cabin) during the summer camp period, while also providing comfortable shelter for retreat attendees during the other seasons of the year. A year-round residence would also be provided for the Camp's director or caretaker (and family) to provide continual presence on the site for added security. The rest of camper lodging would be provided by 12 tent platforms (up to four occupants/tent) that would only be utilized during the summer camping season. In addition, there will be a central lodge with classrooms and facilities for dining, a camp office, a kitchen, and restrooms.

2. Swimming, Boating and Fishing Areas - The camp's location adjacent to Coralville Lake provides a significant amount of shoreline for campers to enjoy water sports. Boating would be concentrated near the central part of the site, where a removable floating facility would be provided for use by different activities. A swimming beach would be constructed by grading a ~200' x ~50' area and by transporting sand to the area. A small-grassed area would also be provided. Fishing would occur along the banks away from the swimming area.

3. Educational Trails and Facilities - The campsite provides excellent opportunities for outdoor education. The lower southwestern portion of the site provides rock cliffs that would provide opportunities for rock climbing, orienteering training and challenging course work. Educational trails would provide campers an opportunity to learn the flora and fauna of the area, as well as some of the geography/geology unique to the area (e.g., Devonian limestone deposits and glacial moraine deposits).

4. Forest Meditative Isolation – Opportunities for meditation would be provided as a component of the camping or retreat experience. Consequently, much of the site would be minimally developed through the sparse use of trails so as to preserve this important feature.

3.1.2 Users Served

The MYCA Camp would accommodate approximately 120 campers and 16 staff on a daily basis. This would be for the entire length of the summer camp period of approximately 10 weeks (seven days per week), which results in approximately 9,500 user-days. Some of the camp staff would be from the local area and would not overnight at the campsite.

The lodge will be usable by other nonprofit organizations in the region during the non-camping season. Over the course of the non-camping season (42 weeks), up to 4,000 people could utilize the lodge for conferences, retreats, weddings, etc. MYCA projects that 18 weekends per year would experience some conference/retreat activity. With approximately 45 to 100 attendees per weekend, these activities would generate 800 to 1800 users. Family retreats on six to eight weekends are projected to generate another 180 to 450 users. Additionally, 1,000 users are projected to be generated by 10 weddings.

3.1.3 Site Improvements

Central Lodge

A central lodge building (250' x 70') would be located near the eastern end of the main site access road (Figure 3-1). It would accommodate 150-200 persons at a time in its central meeting room, with supporting kitchen and restroom facilities. No overnight lodging would be provided in the central lodge. There would also be two classrooms and a camp office within the structure. Information contained in MYCA's application indicates that the two-story lodge would be placed on the lowest possible elevation to assist dimunition of the structure within the landscape. The lodge would be designed to provide a lower horizontal profile on the north side, thereby reducing visibility from the neighborhood.

Cabins
Overnight lodging would be provided by a series of 10 cabins (29.5' x 25.5') located on the south side of the access road. Each cabin would house up to eight people (campers and counselors). Their location on the south side of the ridge is to ensure separation from the neighborhood to the north and maximize the aesthetic value of the site to conference and retreat users in the off-season. Though the site would only be able to house up to 80 people per night in permanent lodging structures during the non-camping season, additional lodging and dining is available locally within a 5-10 minute drive.

Tent Camping
Twelve tent platforms (14' x 14'), each large enough for four campers, would be located lower on the site toward the reservoir to facilitate greater enjoyment of the water by campers. Tents would not be used for conference and retreat activities.

Hiking/Walking Trails
A trail system would be developed to provide access to the central and southern portions of the site. Figure 3-1 conceptually illustrates the location of the trail system. This trail system would provide access to and from cabins, tent areas, and the central lodge, and would also extend beyond the main activity area to provide educational and meditative opportunities. No access would be developed to the northeastern portion of the site in order to minimize disturbance of ospreys and other raptors that may utilize the area for nesting or roosting; however the area is available for passive use by people hiking in the area.

Caretaker Residence
A residence (24' x 30') would be built to house the director/caretaker (and family) of the facility and provide for security of the site. The caretaker's residence would be built near the entrance to the camp in the vicinity of 200th Street NE, as illustrated in Figure 3-1 (Inset A).

Access and Parking
Access to the site from 200th Street NE would be along the same ridge top alignment that served a prior Girl Scout campground. Much of the gravel surface of the former road has deteriorated and would require substantial improvements in order to provide reliable and all-weather access to the site.

Based upon information provided by MYCA, Average Daily Traffic (ADT) is expected to be 50 vehicles per day (vpd, 25 round trips per day) during camp operation (please refer to section 5.4.10, Traffic Generation and to Appendix F: Supplemental Traffic Analysis). This estimate was based upon 45 trips per day plus the addition of 2-4 bus trips per day (rounded to 50 vehicle trips/day). The lease applicant originally proposed acquiring an off-site parking/staging area to shuttle camp users during high use periods (e.g., pick-up and drop-off of campers, retreats, etc.). Upon further analysis, MYCA has indicated that this off-site parking/staging area would not be needed during the camping season, and would only be required for events during the non-camping season. Arriving and departing campers would be staggered over a three-day period (Friday through Sunday) in order to ensure sufficient onsite parking. Traffic would consist of the drop-off and pick-up of campers (Friday through Sunday), staff arrivals and departures, periodic deliveries and day trips (primarily by bus) to off-site locations. Certain special events at the site, such as weddings or meetings, could produce traffic volumes in excess of 100 vpd (50 round trips per day) at times throughout the year.

A total of 66 parking spaces have been proposed, including 52 spaces near the central lodge, 10 parallel spaces along the main entrance road near the campground, and 4 spaces at the caretaker's residence (includes two separate parking spaces and the driveway). Four (4) handicapped accessible spaces would be provided near the central lodge. If activities on the premises require off-site parking, the applicant is responsible for providing the necessary additional parking at another location.

Water/Wastewater Treatment

In order to support projected on-site populations outlined in Section 3.1.2, the site would need adequate water supply and wastewater treatment facilities. The site currently has one well. Under this alternative, water would be required for toilet facilities in the permanent cabins, a common bath/toilet facility to support the campground, the caretaker's residence, food preparation activities, restrooms in the central lodge, and occasional laundry operations. Typical water demand levels are based on criteria developed for various uses and establishments as indicated in Table 3-1.

Table 3-1. Alternative 1: Selected Typical Water Demand Levels (Gpd)

TYPE OF USE OR ESTABLISHMENT	GALLONS PER DAY (GPD)
Apartments/multiple family (per resident)	60
Bath houses (per bather)	10
Day camps with no meals served (per camper)	15
Resorts (day and night) with limited plumbing (per camper)	50
Tourist camps with central bath and toilet facilities (per person)	35
Cottages with seasonal occupancy (per resident)	50
Single family dwelling units (per resident)	50-75
Laundries/self-service (gallons per washing)	50
Restaurants with toilet facilities (per patron)	7-10

Source: Values from Standard Handbook for Environmental Engineering, p. 6.23, table 6.14

Using these criteria, the average daily water demand/wastewater flow for this alternative was computed and is presented in Table 3-2. The computation reflects an average daily water demand that is based on full occupancy of the camp. Some reduction of this use volume may be expected to occur during the non-camping season. Various peaking factors would have to be applied for the design of separate components of the water and wastewater systems. One such component could include an underground potable water storage tank to provide sufficient quantities of water during peak periods.

Although not specifically addressed in the applicant's lease proposal to the Corps, consideration may be warranted to provide a non-potable fire protection system that utilizes water from the adjoining lake. Such a system would afford some degree of protection for the proposed investment.

One (1) well is located on the project site that formerly served the Girl Scout campground. According to Iowa Geological Survey Bureau records, this well is 185 feet deep and is capable of producing 20 gpm (or about 28,000 gallons per day) with no appreciable drawdown. The estimated average daily water demand for Alternative 1 is 8,860 gpd, as shown in Table 3-2.

The lease applicant has proposed an aerated primary wastewater treatment facility with a soil absorption field for secondary disposal and treatment of wastes generated at the camp, central lodge, and caretaker's residence. Based upon tests performed on-site, the soils are considered adequate for a soil absorption disposal system using a loading rate of 2.0 square feet per gallon per day at a soil percolation rate of 45 minutes per inch. The soil absorption field appropriately sized to treat the required average daily flow is estimated to be 1.02 acres.

Table 3-2. Alternative 1: Estimation of Water Demand

FACILITY	USE ASSUMPTION	WATER USE LEVEL (GPD)
Cabin occupants (10 cabins/8 persons per cabin including campers and staff)	10 x 8 x 50 gallons per occupant per day	4,000
Tent occupants (12 tent pads/4 campers per tent)	12 x 4 x 35 gallons per camper per day	1,680
Caretaker's residence (assume 4 occupants)	1x 4 x 75 gallons per resident per day	300
Food preparation (for camp occupants/central lodge)	128 x 10 gallons per camper per day	1,280
Laundry (assume that one-fourth of camp occupants will do laundry on a given day)	128 x 0.25 x 50 gallons per washing	1,600
TOTAL WATER DEMAND		**8,860**

Removal of Camp Daybreak Structures
This alternative would consist of the removal of all structures and facilities, with the possible exceptions of the existing picnic shelter and the existing well, associated with the former Camp Daybreak by the Mississippi Valley Girl Scout Council under the former lease contract. This would include all tent platforms, latrines, storage shed and former lodge building pad.

3.1.4 Planned Programming
The program of the camp is designed to expand the experience and knowledge of every camper within a supportive and diverse environment. Daily activities may include those specified in Table 3-3.

3.1.5 Target Community
The target audience for the use of the camp could include people involved in nonprofit organizations within a 400-mile radius from the camp. Primary users are not expected to be outside of that radius. Use of the camp for conferences and retreats would primarily occur on the weekends. However, between l-3 conferences could occur during the week.

3.1.6 Responsibilities of Lessee
The lessee (a nonprofit organization) would assume responsibility, under the terms of the lease, for almost all matters relating to the construction of facilities, and the operation and maintenance of the premises. The lessee would be required to keep the premises in good order and in a clean, sanitary, and safe condition by and at the expense of the lessee. However, the use and occupation of the premises shall be subject to the general supervision and approval of the Corps, and to such rules and regulations as may be prescribed from time to time. A sample lease format is attached (Appendix D). All required exhibits to the lease also would be attached to the lease. One of the exhibits required in the lease, the Development and Management Plan, would designate where improvements would be placed, and would explain how the facilities and premises would be managed, operated, and maintained. The site plan for the proposed camp is shown in Figure 3-1. Due to the preliminary nature of the lease application, a Development and Management Plan has not been finalized for the proposed lease. The lessee would be required to furnish an annual financial statement of receipts and expenditures.

3.1.7 Responsibilities of the Corps
The Corps would be responsible for general oversight of the lessee's operations for compliance with the terms of the lease.

Table 3-3. Alternative 1: Proposed MYCA Programming

	PROGRAM	CONTENT
ON-SITE	Cultural Programs	
	Language Development	➢ English as a second language ➢ Arabic as a second language
	Computer use	
	Water Sports	➢ Swimming, Canoeing and Fishing
	Camping	
	Challenge Course Mastery	
	Orienteering	
	Environmental Education	
	Archery	
	Crafts and Art	
	Folklore and Folk Stories	
OFF-SITE	Nature Education	➢ Fossil Gorge - Coralville Dam Spillway ➢ Palisades Park - Off Rt. 30, Linn County ➢ Macbride Museum - University of Iowa ➢ Raptor Center – Macbride Campus, University of Iowa
	Horseback Riding	
	Cultural Entertainment	➢ Freedom Fest - Cedar Rapids ➢ Jazz Fest - Iowa City ➢ Hancher Auditorium - University of Iowa
	Educational Programs	➢ University of Iowa
	Recreational Programs	➢ Soccer

MYCA, 1999

3.2 Alternative 2: Reduced Use

This alternative consists of the issuance of a lease to a nonprofit organization at a reduced level of use (Figure 3-2). The selection of about a 50% reduction in development as a basis for Alternative 2 was done in order to establish an intermediate level of use, which did not include a retreat/conference center or caretaker's residence. This effectively reduced the project footprint and the physical and non-physical impacts relative to Alternative 1, making it similar to the footprint of the former Camp Daybreak. Although the applicant (e.g., MYCA could be a potential applicant), and hence the precise level of use, is not known at this time, it is anticipated that this alternative would include the following site uses.

3.2.1 Planned Use

1. Camp Lodging and Indoor Activities - Under a Reduced Use Alternative, the site would provide overnight lodging for approximately 61 people during the summer camping season, and for approximately 40 people during the non-camping season. Lodging would be provided for by a series of five cabins (all season) and five tent platforms (summer). There would also be a central lodge that would be used for general meeting purposes and to house the camp director during the summer camping season.

2. Swimming, Boating and Fishing Areas – Location of the camp along Coralville Lake provides a significant amount of shoreline for campers to enjoy water sports such as canoeing, swimming, and fishing. A swimming beach would be constructed by grading a ~100' x ~ 50' area and by bringing sand into the area. A small-grassed area would also be provided. Fishing would occur along the banks away from the swimming area.

3. Educational Trails and Facilities – The site provides excellent opportunities for numerous outdoor learning experiences. To provide for outdoor education, interpretive trails would be developed within the site that highlights natural features (e.g., tree species, habitats, geologic formations, etc.).

3.2.2 Users Served

The camp, under the Reduced Use Alternative, would accommodate up to 61 campers and staff per day during the summer camping season. Use of the site is expected to be highest during the camping season at 61 users/day or a total of approximately 4,300 user-days. Use during the non-camping season is expected to equal approximately 1,500 user-days, and would be limited to short-term (i.e., 1-2 days or nights) overnight use or day use.

3.2.3 Site Improvements

Specific improvements to the site would include the following:

Central Lodge

A central lodge measuring approximately 40' x 60' would be located near the end of the main road/trail that traverses the site (Figure 3-2). The lodge would primarily serve as a gathering area for groups of campers or other users for meetings, crafts, or planning activities. It would consist of a central meeting room, a kitchen, restroom facilities, and a storage area. Overnight accommodations would be limited to living quarters for the camp director during the summer camping season. Additionally, the lodge would not be used for conferences or retreats.

Cabins

Overnight lodging would be provided by a series of five cabins (29.5' x 25.5') located on the south side of the access road. Each cabin would house up to eight persons. They would be located on the south side of the ridge in order to ensure separation from the neighborhood to the north and to provide aesthetic views of and easy access to the lakeshore area.

Tent Camping

Five tent platforms (14' x 14') would be constructed along a woodland trail west of the lodge, under this alternative. Each tent would hold four campers.

Hiking/Walking Trails

A trail system would be developed to provide access to the central and southern portions of the site. This trail system would provide access to and from cabins, tent areas, and the central lodge, and would also extend beyond the main activity area to provide for educational and meditative opportunities. No access would be developed to the northern portion of the site in order to minimize disturbance to ospreys that may utilize the area for nesting; however the area would be available for passive use by people hiking in the area.

Access and Parking

Access to the site under this alternative would be from 200th Street NE and would follow the same ridge top alignment as the road that served a prior Girl Scout campground. Much of the gravel surface of the former road has deteriorated and would require substantial improvements in order to provide reliable and all-weather access to the site. Increased traffic associated with this alternative, which includes overnight accommodations for up to 61 campers and staff personnel during the camping season, is not expected to exceed 25 vehicles per day, primarily during pick-up and drop-off periods.

A total of 33 parking spaces would be provided under this alternative, including 26 spaces adjacent to the central lodge and 7 located along the main entrance road near the campground (Figure 3-2). Two (2) handicapped accessible spaces would be provided near the central lodge. Since no more than 40 people can overnight at the site during the non-camping season, onsite parking should be adequate and no offsite parking would be required.

Water/Wastewater Treatment

In order to support projected on-site populations developed under this alternative, the site would need an adequate water supply as well as wastewater treatment facilities. Under this alternative, water would be required for toilet facilities in the permanent cabins, a common bath/toilet facility to support the

campground, food preparation activities, camp director accommodations and restrooms in the central lodge, and occasional laundry operations.

Typical water demand levels are based on criteria developed for various uses and establishments indicated in Table 3-1. Using these criteria, the average daily water demand/wastewater flow for this alternative is as presented in Table 3-4.

The computation in Table 3-4 reflects an average daily water demand based on full occupancy of the camp. Various peaking factors would have to be applied for the design of separate components of the water and wastewater systems. One such component could include an underground potable water storage tank to provide sufficient quantities of water during peak periods.

One (1) well is located on the project site that formerly served the Girl Scout campground. According to Iowa Geological Survey Bureau records, this well is 185 feet deep and is capable of producing 20 gpm (or about 28,000 gallons per day) with no appreciable drawdown.

This alternative would require the installation of an aerated primary wastewater treatment facility with a soil absorption field for secondary disposal and treatment of wastes generated from the camp and central lodge. Based on tests performed on-site, the soils are considered adequate for a soil absorption disposal system using a loading rate of 2.0 square feet per gallon per day at a soil percolation rate of 45 minutes per inch. The soil absorption field appropriately sized to treat the required average daily flow is estimated to be 0.47 acres.

Removal of Camp Daybreak Structures
This alternative would consist of the removal of all structures and facilities, with the possible exceptions of the existing picnic shelter and the existing well, associated with the former Camp Daybreak by the Mississippi Valley Girl Scout Council under the former lease contract. This would include all tent platforms, latrines, storage sheds and former lodge building pad.

Table 3-4. Alternative 2: Estimation of Water Demand

FACILITY	USE ASSUMPTION	WATER USE LEVEL (GPD)
Cabin occupants (5 cabins/8 persons per cabin including campers and staff)	5 x 8 x 50 gallons per occupant per day	2,000
Tent occupants (5 tent pads/4 campers per tent)	5 x 4 x 35 gallons per camper per day	700
Lodge – Camp Director Quarters PG 11	1 x 75 gallons per day	75
Food preparation (for camp occupants/central lodge)	60 x 10 gallons per camper per day	600
Laundry (assume that one-fourth of camp occupants will do laundry on a given day)	60 x 0.25 x 50 gallons per washing	750
TOTAL WATER DEMAND:		**4,125**

3.2.4 Planned Programming
Because the nonprofit lessee under this alternative has not yet been identified, the programming of the camp is currently unknown. However, it is expected that programming may include many of the elements listed for Alternative 1 in Table 3-3.

3.2.5 Target Community
Since the lessee has not yet been identified under this alternative, the target community cannot be characterized at this time.

3.2.6 Responsibilities of Lessee

The lessee would assume responsibility, under the terms of the lease, for almost all matters relating to the construction of facilities, and operation and maintenance of the premises. The lessee would be required to keep the premises in good order and in a clean, sanitary, and safe condition by and at the expense of the lessee. However, the use and occupation of the premises would be subject to the general supervision and approval of the Corps, and to such rules and regulations as may be prescribed from time to time. A sample lease format is attached (Appendix D). All required exhibits to the lease also would be attached to the lease. One of the exhibits required in the lease, the Development and Management Plan, would designate where improvements would be placed, and would explain how the facilities and premises will be managed, operated, and maintained. The site plan for the proposed camp is shown in Figure 3-2. Due to the lack of a lease application for this alternative, a Development and Management Plan has not been prepared. The lessee would be required to furnish an annual financial statement of receipts and expenditures.

3.2.7 Responsibilities of Corps

The Corps would be responsible for general oversight of the lessee's operations for compliance with the terms of the lease.

3.3 Alternative 3: Alternate Use

Under the Alternate Use Alternative, the site would not be an outgrant area and would be limited to passive day use recreation, outdoor educational activities, hiking, orienteering, rock climbing, and wildlife management (Figure 3-3). This level of intended use would suggest that the Corps' Master Plan zoning should be changed from recreation/intensive use to recreation/low density use to accurately reflect the level of proposed use and development. Specific recreational activities that would be permitted on-site would include shoreline fishing, hiking, birding, swimming, boating, and wildlife observation. It is assumed that the costs for this proposed use would be borne by the Corps.

3.3.1 Planned Use

1. Natural Resource Management - Under this alternative, natural resources on-site would be managed by the Corps or by other cooperating entities to enhance and maintain the natural resources on-site. This may include such activities as the establishment of nest areas/structures, timber management and noxious species control.

2. Fishing – While no fishing platform or dock area would be provided, bank fishing would be allowed.

3. Educational Trails and Facilities – The site provides excellent opportunities for numerous outdoor learning experiences. To provide for outdoor education, interpretive trails would be developed within the site to highlight natural features (e.g., tree species, habitats, geologic formations, etc.) and natural processes (e.g., erosion, succession, wetland function, etc.). Appropriate signs would be provided along the interpretive trail with an informational self-guided trail map.

3.3.2 Users Served

The site, under the Alternate Use Alternative, is expected to accommodate up to 50 users per day (5 groups of 10 or less) during peak use periods. Use of the site is expected to be highest during the summer months, for roughly ten weeks while use during other times of the year may be sporadic. The use level associated with this alternative is estimated to be approximately 50 users/day over a 10-week period (or about 3, 500 user-days).

3.3.3 Site Improvements

Potential improvements to the site could include the following:

Interpretive Trail System
An interpretive trail system would be developed to provide access to the central and southern portions of the site. Significant environmental/ecological features would be identified and described along this trail system. No access would be developed to the northern portion of the site in order to minimize disturbance to ospreys that may utilize the area for nesting.

Access and Parking
Access to the site to support the activities identified under this alternative would be from 200th Street NE at the entrance to the former Girl Scout campground. A short roadway length and turnaround would be provided at this location to prevent vehicles from backing out onto 200th Street NE upon leaving the site. It is estimated that the ADT generated by the projected use of the site under this alternative would be 10. A total of five (5) off-street parking spaces would be provided in order to allow uninterrupted traffic flow into and out of the site.

Water/Wastewater Treatment
No water supply or wastewater treatment is proposed under this alternative. A vault toilet facility as shown in Figure 3-3 would be located near the entrance road for use by on-site groups.

Removal of Camp Daybreak Structures
This alternative would consist of the removal of all structures and facilities, with the possible exceptions of the existing picnic shelter and the existing well, associated with the former Camp Daybreak by the Mississippi Valley Girl Scout Council under the former lease contract. This would include all tent platforms, latrines, storage sheds and the former lodge building pad.

3.3.4 Planned Programming
Under this alternative, the site would be open to all interested public and planned programming would be limited to activities on the part of the Corps and/or cooperating agencies. It is assumed that these activities would include increasing public awareness and appreciation of the site's natural attributes. Such planned activities could include:

- regularly scheduled guided tours by the Corps and/or cooperating agencies for the public and interested organizations,
- outdoor classroom sessions on-site by local schools and colleges,
- "adopt a habitat" program to encourage donations of time and money to maintain the site in its natural condition, and
- sponsored seasonal bird surveys.

Because the recreational use of this site would primarily consist of passive recreation, no significant planned programming would be developed. However, the site would be made part of a public awareness program to enhance the knowledge of, and subsequent use by, the public.

3.3.5 Target Community
Users under this alternative are anticipated to consist of local and regional groups and individuals interested in passive forms of outdoor recreation and outdoor education. Such groups may include birding clubs and individuals, school children, families, and other groups interested in natural history and conservation.

3.3.6 Responsibilities of Corps
The Corps would manage the area for recreational/low density purposes.

3.4 Alternative 4: No Action
Under the No Action Alternative, the site would not be the subject of any planned use or special management. The site would remain in its present condition, except for the removal of site features formerly associated with Camp Daybreak, by the former lessee, the Mississippi Valley Girl Scout Council

under the former lease contract. This would include all tent platforms, latrines, storage sheds, the well, the picnic shelter and former lodge building pad.

Since the Camp Daybreak lease expired in 1991, there has been no additional development or formal use of the site by the Corps. As a result of this lack of use, the area is returning to a more natural state. Areas that were open when the camp was active are now overgrown with tolerant plant species. It is likely that this succession would continue under the No Action alternative, until these areas are similar to the surrounding upland forests. Because the site is owned by the Federal government, and is isolated from nearby development activities, it is unlikely that there would be any disruption of this succession. It is also assumed that the use of this site by the public would continue to be minimal and limited primarily to the residents in the immediate area of the site.

3.5 Alternative Analysis Summary and Recommendation of the Preferred Alternative

A total of four alternatives were examined as part of this Environmental Assessment. These included the following:

1. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization at a level of use proposed in the Muslim Youth Camps of America (MYCA) application;
2. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization at a reduced level of development and use;
3. Low density recreational day use of the former Camp Daybreak area under administration by the Corps (no lease); and
4. No action-no current plans for development or lease.

Specific elements of each alternative under consideration are described in the previous sections and are summarized in Table 3-5. In comparison, the results of the analyses of each project alternative and their potential impacts to the natural and human environments are presented in detail in Section 5.0 and are summarized in Table 3-6.

Non-Preferred Alternatives

The analysis of all impact criteria indicated that there were no significant environmental impacts as a result of implementation of any of the four alternatives. However, while not viewed to be significant, there is a recognizable difference in the magnitude of environmental impact between each alternative. In general, the magnitude of impact on the site and the surrounding infrastructure is successively reduced from Alternative 1 to Alternative 4. Alternatives 1 and 2 were also found to be consistent with the Master Plan's designation of the use of the site as high intensity recreation. However, Alternative 2: Reduced Use was recognized as offering a lower level of recreational benefit as compared to Alternative 1: MYCA Lease. In contrast, Alternatives 3 and 4 provide some recreational use of the portions of the site. However, these alternatives do not meet the criteria for high intensity recreational use of the premises and do not serve the intended use of the land as set forth in the Master Plan.

Preferred Alternative

Alternative 1: MYCA Lease is recommended as the preferred alternative. This alternative was selected for the following reasons:

- Finding of no significant impact to environment,
- Consistent with project purpose and need,
- Consistent with the Corps' Master Plan and designated land use for site, and
- Provides increased recreational benefit to the greatest number of users

However, it should be noted that MYCA or any other applicant proposing the level of use described under this alternative would be required, as a condition of a lease agreement, to obtain all appropriate and applicable approvals and permits including the following:

- Water Quality Certification (Section 401 permit) from IDNR,
- Section 404 permit from USACE, Rock Island, and
- Variance from IDNR for wastewater treatment facility siting.

The MYCA Lease and Reduced Use Alternatives do not meet current state standards for the location of wastewater treatment facilities. Development of either alternative would be contingent on a change in state standards (IDNR is currently reviewing these standards) or a variance in the buffer zone requirements. The Corps has contacted the IDNR requesting clarification on the standards for locating wastewater treatment facilities at the project site (letter dated November 29, 2000 in Appendix A). However, IDNR has provided no clear indication of their position on the issuance of a variance for siting of the wastewater treatment facility under either Alternative 1: MYCA Lease or Alternative 2: Reduced Use. In the event that the IDNR does not issue a variance for either Alternative 1 or 2, alternative wastewater development proposals that meet the IDNR wastewater treatment requirements should be considered.

Table 3-5. Summary of Key Alternative Elements

KEY ALTERNATIVE ELEMENTS	ALTERNATIVE 1: MYCA LEASE	ALTERNATIVE 2: REDUCED USE	ALTERNATIVE 3: ALTERNATE USE	ALTERNATIVE 4: NO ACTION
Level of Use	136 users/day (or 9,500 user-days) during the camping season and 4,000 user-days during the non-camping season	61 users/day (4,300 user-days) during the camping season and 1,500 user-days during the non-camping season	50 users/day during peak periods (3, 500 user-days)	Incidental and intermittent
Lodge	70'x250'	40'x60'	None	None
Cabins	10	5	0	0
Tent Platforms	12	5	0	0
Beach	200'x50'	100'x50'	None	None
Trails	Complex area trails, woodland hiking trails	Complex area trails, woodland hiking trails	Woodland hiking trails with interpretive signage	Unofficial trails
Caretaker Residence	Yes	None	None	None
Parking	66 Spaces On-Site	33 Spaces On-Site	5 Spaces On-Site	None
Wastewater Treatment	Leachfield, requires IDNR variance	Leachfield, requires IDNR variance	Single Vault Toilet	None
Water Usage	8,860 gpd	4,125 gpd	None	None
Footprint Area*	4.8 acres	2.3 acres	0.1 acre	None

*The footprint area for Alternatives 1 & 2 includes the land necessary to incorporate all of the above features, including the leach field associated with wastewater treatment facilities.

Table 3-6. Summary of Findings (page 1 of 3)

RESOURCE	ALTERNATIVE 1: MYCA LEASE	ALTERNATIVE 2: REDUCED USE	ALTERNATIVE 3: ALTERNATE USE	ALTERNATIVE 4: NO ACTION
Soils and Geology	Localized soil erosion during construction	Localized soil erosion during construction	No impact	No impact
Terrestrial Ecology	Loss of 403 trees, displacement of biota, loss of 4.8 acres terrestrial habitat[1]	Loss of 202 trees, displacement of biota, loss of 2.3 acres terrestrial habitat[1]	Loss of 39 trees, minimal displacement of biota, loss of 0.1 acre terrestrial habitat[1]	No impact
Aquatic Ecology	Localized mortality of aquatic biota due to beach construction, alteration of 0.2 acre of habitat	Localized mortality of aquatic biota due to beach construction, alteration of 0.1 acre of habitat	No impact	No impact
Wetland Resources	Conversion of ~0.1 acre PFO1A[2] wetland	No impact	No impact	No impact
Threatened and Endangered Species	Selected removal of trees potentially used by bald eagle and Indiana bat, no significant impact to Federal or state listed species	Selected removal of trees potentially used by bald eagle and Indiana bat, no significant impact to Federal or state listed species	No impact	No impact
Surface Water Resources	Localized siltation/sedimentation, short term increases in turbidity, requires issuance of variance for wastewater treatment setback limits from IDNR	Localized siltation/sedimentation, short term increases in turbidity, requires issuance of variance for wastewater treatment setback limits from IDNR	No impact, compliant with IDNR wastewater treatment setback limits	No impact

Table 3-6. Summary of Findings (page 2 of 3)

RESOURCE	ALTERNATIVE 1: MYCA LEASE	ALTERNATIVE 2: REDUCED USE	ALTERNATIVE 3: ALTERNATE USE	ALTERNATIVE 4: NO ACTION
Ground Water Resources	No impact	No impact	No impact	No impact
Floodplains	No impact	No impact	No impact	No impact
Recreation	Consistent with the Corps' objective for site, provides additional recreational resource in Coralville Lake Project area	Consistent with the Corps' objective for site, provides additional recreational resource in Coralville Lake Project area	Does not provide intensive use specified by Corps, but promotes recreational use of site	Does not provide intensive use specified by Corps; any use would be incidental
Land Use	Consistent with the Corps' Master Plan	Consistent with the Corps' Master Plan	Inconsistent with Corps Master Plan, but promotes recreational use of site	Inconsistent with Corps Master Plan
Community and Regional Growth	Provides 105 construction jobs and 16 permanent jobs at camp, construction cost would result in statewide increase in output, operation of camp would result in annual increase in statewide output	Would provide approximately 50 percent of the benefits that would occur under Alternative 1	Minimal temporary increases in employment and output due to construction	No impact
Community Cohesion	No Significant Impact	No impact	No impact	No impact
Demographics	Temporary increase in seasonal populations at local level due to attendance at camp, no significant impact	Temporary increase in seasonal populations at local level due to attendance at camp, no significant impact	Intermittent daytime increase in seasonal population at local level due to day use of site, no significant impact	No impact

Table 3-6. Summary of Findings (page 3 of 3)

RESOURCE	ALTERNATIVE 1: MYCA LEASE	ALTERNATIVE 2: REDUCED USE	ALTERNATIVE 3: ALTERNATE USE	ALTERNATIVE 4: NO ACTION
Displacements	No Displacements	No Displacements	No Displacements	No Displacements
Property Values and Tax Revenues	No impact to property values or tax base, possible minimal increases in regional sales tax revenue	No impact to property values or tax base, possible minimal increases in regional sales tax revenue	No impact	No impact
Public Facilities and Services	No impact	No impact	No impact	No impact
Life, Health, and Safety	No impact	No impact	No impact	No impact
Traffic	No significant impact	No significant impact	No significant impact	No impact
Aesthetic Values	No significant impact, change in visual character of site as viewed from lake from natural landscape to landscape with development	No significant impact, minimal change in visual character of site as viewed from lake, some structures visible	No impact	No impact
Noise	Up to 5 dBA increase in noise over background for local residential receptor, no significant impact	Up to 2 dBA increase in noise over background for local residential receptor, no significant impact	No impact	No impact
Cultural Resources	No impact	No impact	No impact	No impact
Solid/Special Waste	No impact	No impact	No impact	No impact
Manmade Resources	Removal of existing structures, no significant impact	Removal of existing structures, no significant impact	Removal of existing structures, no significant impact	Removal of existing structures, no significant impact

[1] Total land impacted includes the land necessary to incorporate all of the project features, including the wastewater leach field.
[2] Palustrine Forested broad-leaf deciduous temporarily flooded

4.0 AFFECTED ENVIRONMENT

4.1 Climate

Johnson County has a temperate climate that is hot in the summer and cold in the winter. The sun shines 70 percent in summer and 50 percent in winter. The average temperature in the summer is 73 degrees Fahrenheit with the average daily maximum temperature being 85 degrees Fahrenheit. Most of the rainfall for the year occurs during the period from April to September. The average annual precipitation is 34 inches. Localized thunderstorms and tornadoes are occasional (SCS, 1983). In the winter, the average temperature is 24 degrees Fahrenheit with an average daily minimum of 15 degrees Fahrenheit. When there is precipitation in winter, it is in the form of snow. The average seasonal snowfall is 29 inches. Average relative humidity in mid-afternoon is about 60 percent. Humidity is usually higher at night, and the average humidity at dawn is approximately 80 percent.

4.2 Natural Resources

4.2.1 Soils and Geology

Soils

Soils within the general project area have developed on glacial till and loess parent materials. The three major associations represented are the Shelby-Lindley, Lamont-Chelse, and the Fayette associations. The Shelby-Lindley soils are dark colored, moderately well drained loams found on strongly sloping to steep, well-dissected slopes (5 to 30 percent slopes). Lamont-Chelsea soils were developed on wind-deposited aeolian sand. They are light colored, well to excessively drained, and found on uplands and stream terraces (1 to 40 percent slopes). Fayette soils are typically well to moderately drained silty loams found on gently to strongly sloping side slopes (1 to 24 percent slopes).

Surficial soils on the project site consist almost entirely of the Fayette series (Figure 4-1). Soil characteristics are primarily a function of the steepness of the slope on which they occur. These soils generally consist of a dark gray surface silt loam (about 2 to 3 inches thick), over a dark grayish brown to brown silt loam (about 4 to 7 inches thick), over a subsoil consisting of brown to yellowish brown silty clay loam.

Fayette soils are moderately permeable and surface runoff is typically medium in flatter areas and rapid on steeper slopes. These soils have a slight to moderate erosion hazard, low load capacity strength, are highly susceptible to frost action, and have moderate shrink-swell properties. Restrictions for septic tank absorption fields and sewage lagoon uses are listed as slight to severe, based primarily on the steepness of the slope on which these soils occur. Restrictions for recreational development based upon soil properties are listed as slight (SCS, 1983).

Geology

The materials that make up the stratigraphic column underlying the general project area range in age from Pre-Cambrian (>600 million years old) to Recent (10 -12,000 years old). Pre-Cambrian age igneous and metamorphic basement rocks are overlain by Cambrian dolomites and sandstones and Ordovician dolomites, sandstones, limestones and shales. The near-surface bedrock within the general project area is comprised of Silurian dolomites and Devonian limestones, dolomites, and shales. Occasional remnants of Mississippian and Pennsylvanian limestones occur locally throughout the region (U.S. Army Corps, 1993).

The bedrock formations are blanketed with unconsolidated deposits of clay, silt, sand, and gravel of glacial origin. Deposits of the Nebraskan and Kansan ice sheets cover the entire Iowa River Basin. Deposits of the younger Wisconsin ice sheet extend into northern Johnson County. Wind-deposited loess, derived from the glacial deposits, covers most of the area (U.S. Army Corps, 1993).

The geologic log recorded during installation of a water supply well at the project site reflects a geologic sequence (youngest to oldest) dating from Silurian aged limestone as is presented in Table 4-1.

Table 4-1. Geologic Sequence in Project Area

FEET BELOW GROUND SURFACE (BGS)	DESCRIPTION
0 to 50	Loess; glacial till
50 to 80	Little Cedar Formation (lithology: limestone)
80 to 95	Davenport member of Pinicon Ridge Formation (lithology: limestone)
95 to 120	Spring Grove member of Pinicon Ridge Formation (lithology: dolomite)
120 to 140	Kenwood member of the Pinicon Ridge Formation (lithology: dolomite, shale, sandstone)
140 to 180	Silurian dolomite, shale, sandstone

Prime and Unique Farmlands
Earlier aerial photographs of the site indicated the presence of agricultural lands and farms immediately adjacent to the project site as late as the 1980's. However, due to development in the area, these lands have been converted to other uses and are no longer farmed. The project site was also examined for the presence of soil types that are listed as prime and unique soils by the Natural Resources Conservation Service. Fayette soils on "B" slopes are listed by Johnson County Natural Resources Conservation Service as prime farmland soils (see Figure 4-1). However, these soils do not occur within the project area.

4.2.2 Terrestrial Ecology

Plant Communities
The upland areas surrounding Coralville Lake are comprised of a mosaic of natural habitats and plant community types. As is indicated by Tables 4-2 and 4-3, deciduous forest habitat of varying tree size classes comprises roughly 8,300 acres or about 43% of the Coralville Lake project. Prior to use of the area by farmers, the forested hills surrounding the Iowa River were an extension of the central hardwood forest projecting westward into the tall grass prairie region. Except for steep hillsides which remained forested, clearing of the hardwood stands produced open pastureland, cropland, and scattered woodlots prior to purchase by the Corps. Corps ownership has subsequently resulted in increased acreage of deciduous forest brought about by both "old field" succession and the elimination of grazing.

Approximate quantities of vegetative cover types occurring on the project site are presented in Table 4-4 and are illustrated in Figure 4-2. The site is dominated by mixed deciduous woodland of varying slopes and aspects, and is narrowly dissected by small ravines and drainage ways. Field reconnaissance of the project area was conducted on two separate occasions to provide a characterization of the site. In most upland areas, this woodland is well established and is characterized by such species as white oak (*Quercus alba*), red oak (*Q. rubra*), basswood (*Tilia americana*), white ash (*Fraxinus americana*), shagbark hickory (*Carya ovata*), hop hornbeam (*Ostrya virginiana*), sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*), and bitternut (*Juglans cinera*) (Table 4-5). Shrub layer species found in this area include blackberry (*Rubus pennsylvanica*), coralberry (*Symphoriocarpos orbiculatus*), and multiflora rose (*Rosa multiflora*). Forb species that characterize this area include poison ivy (*Toxicodendron radicans*), may apple (*Podophyllum peltatum*), tick trefoil (*Desmodium glutinosum*), annual bedstraw (*Galium aparine*), black snakeroot (*Sanicula gregaria*), violet (*Viola* spp.), and wood sorel (*Oxalis* spp.). In addition, less common species such as jack-in-the-pulpit (*Arisaema atrorubens*), bellwort (*Uvularia* spp.), lobelia (*Lobelia siphilitica*) and bloodroot (*Sanguinaria canadensis*) were are also found in the project area.

In contrast, in lower elevations that are frequently disturbed by flooding or in areas that were occupied by the former Camp Daybreak, the woodland is more successional in character, and is dominated by such species as cottonwood (*Populus deltoides*), red mulberry (*Morus rubra*), silver maple (*Acer saccharinum*), box elder (*Acer negundo*), and honey locust *(Gleditsia tricanthos*). Species that were identified during field reconnaissance of the site are identified in Table 4-5.

Areas frequently flooded are comprised of a grass and forb community. Grass and forb species characteristic of this habitat type found in the project area include reed canary grass (*Phalaris arundinacea*), pigweed (*Amaranthus* spp.), black-eyed susan (*Rudbeckia hirta*), ragweed (*Ambrosia artemisiifolia*), aster (*Aster* spp.), beggar ticks (*Bidens* spp.), lambs quarter (*Chenopodium* spp.), orchard grass (*Dactylis glomerata*), horseweed (*Conyza canadensis*), smartweed (*Polygonum* spp.), goldenrod (*Solidago canadensis*), sedges (*Carex* spp.), foxtail (*Setaria glauca*), and slough grass (*Spartina pectinata*).

Table 4-2. Vegetative Cover within the Coralville Lake Area

HABITAT	ACRES	PERCENT
Forest/Savanna	8,312	43.0
Brushland	1,656	8.5
Grassland/Forbs	651	3.4
Native Prairie	88	0.5
Established Prairie	60	0.3
Wetlands[1]	3,478	18.0
Agriculture	4,610	23.9
Developed	460	2.4
TOTAL	**19,315**	**100.0**

[1] Not inclusive of all types
Source: U.S. Army Corps, 1993

Table 4-3. Coralville Lake Timber Size Class Structure

SIZE CLASS (dbh)	TOTAL ACREAGE	PERCENT OF TOTAL
18	2,170.5	31.3
12	1,904.0	27.3
5	2,572.5	36.9
2	300.0	4.3
1	15.5	0.2
TOTAL	**6,962.5**	**100.0**

Source: U.S. Army Corps, 1993

Table 4-4. Vegetative Cover within the Project Area

HABITAT	ACRES	PERCENT
Deciduous Forest	79.0	76.6
Brushland	0.0	0.0
Grassland/Forbs	20.7	19.5
Native Prairie	0.0	0.0
Established Prairie	0.0	0.0
Wetlands	6.3	3.9
Agriculture	0.0	0.0
Developed	0.0	0.0
TOTAL	**106.0**	**100.0**

Wildlife
Wildlife species typically associated with each of the above habitat types and potentially occurring on the project site are presented in Tables 4-6 to 4-8. Typical mammal species likely to utilize the project site include white-tailed deer, raccoon, opossum, red fox, striped skunk, gray and fox squirrel, eastern mole, shrews (e.g., short-tailed, least), and a variety of rodent species (e.g., groundhog, white-footed mouse, and eastern chipmunk).

A variety of bat species may also utilize the tree cavities within the area for roosting and may forage over the shoreline at night. Bats potentially occurring in the vicinity include red bat, little brown myotis, big brown bat, and the Indiana bat, a federally listed endangered species (see Section 4.2.5). Nocturnally active flying squirrels, though uncommon, may also be present.

Woodlands within the site may also meet habitat requirements for breeding birds including black-capped chickadees, tufted titmouse, cardinal, ovenbirds, red-eyed vireo, house wren, bluejay and wood thrushes. Neotropical migrants such as the cerulean warblers, acadian flycatchers, ovenbirds, red-eyed vireos, and a veery were observed during the 1994 breeding/nesting season. Cavity prone tree species such as basswood, silver maple, and black cherry may also accommodate a variety of birds such as red-headed woodpecker, northern flicker, barred owl, screech owl, and wood duck. Smartweed, lamb's quarter, and beggar ticks along shoreline areas provide heavy seed production and cover for dabbling ducks when shorelines of the area are flooded during the fall season. Principal waterfowl species that may occasionally utilize such areas include: mallard, pintail, teal, gadwall and widgeon.

Bald eagle, osprey, and red-tailed hawk have been seen perched in the mature hardwood trees along the shoreline of the Coralville Lake area (U.S. Army Corps, 1997). Ospreys have been released in the area through the efforts of the Macbride Nature Recreation Area, which maintains an active raptor recovery program. Additionally, broad-winged hawk, an uncommon species, has been observed nesting in the vicinity of the Cumberland Ridge residential development north of the project area (Conrads, personal communication)(Figure 4-2). This species usually nests in hardwood forests within proximity to upland clearings and wooded swamps (Stokes and Stokes, 1989).

Wildlife species associated with project area wetlands include many species of waterfowl and shorebirds, amphibians, reptiles, and mammals. Amphibian species most common to project wetlands include green frog and bull frog (*Rana* spp.), and seasonal populations of toads (*Bufo* spp.). Reptiles common to Coralville Lake area wetlands include painted turtles, snapping turtles, and common water snakes.

Table 4-5. Plant Species Identified from Project Site[1] (page 1 of 2)

SPECIES NAME	COMMON NAME	LAYER[2]	ABUNDANCE[3]
Acer negundo	box elder	S,T	O-C
Acer saccharinum	silver maple	S,T	C
Acer saccharum	sugar maple	S,T	O
Anemone canadensis	anemone	H	O
Ambrosia artemisiifolia	common ragweed	H	C
Amaranthus spp.	pigweed	H	O
Apocynum cannabinum	Indian hemp	H	O
Arisaema atrorubens	jack-in-the-pulpit	H	U
Asimina triloba	pawpaw	T	C
Aster spp.	aster	H	C
Bidens spp.	beggar ticks	H	C
Carya cordiformis	bitternut hickory	S	C
Carya ovata	shagbark hickory	T	C
Carex grayii	bur sedge	H	U
Carex luplulina	hop sedge	H	C
Carex spp.	sedge	H	C
Cassia fasciculate	partridge pea	H	C
Celtis occidentalis	hackberry	T	O
Cercis canadensis	red bud	S,T	O
Chenopodium album	Lamb's quarter	H	C
Conyza canadensis	horseweed	H	O
Cornus drummondii	rough-leaved dogwood	S	O
Cyperus spp.	nutsedge	H	C
Dactylis glomerata	orchard grass	H	U
Dalea aurea	prairie clover	H	C
Desmodium glutinosum	pointed tick trefoil	H	O
Elymus spp.	wild rye	H	C
Elymus virginicus	Virginia wild rye	H	U
Erigeron annuus	annual fleabane	H	C
Fraxinus americana	white ash	S,T	O
Galium aparine	annual bedstraw	H	O
Geum canadense	white avens	H	C-A
Glecoma hederacea	ground ivy	H	U
Gleditsia triacanthos	honey locust	T	O-C
Helianthus spp.	sunflower	H	C
Hystrix patula	bottlebrush grass	H	U
Juglans cinerea	bitternut	T	O
Laportea canadensis	wood nettle	H	O
Leersia oryzoides	rice cutgrass	H	O
Lobelia siphilitica	great lobelia	H	U
Lonicera spp.	bush honeysuckle	S	O
Melilotus officinalis	yellow sweet clover	H	O
Morus rubra	red mulberry	S,T	C
Oenothera biennis	common evening primrose	H	O

Table 4-5. Plant Species Identified from Project Site[1] (page 2 of 2)

SPECIES NAME	COMMON NAME	LAYER[2]	ABUNDANCE[3]
Ostrya virginiana	ironwood/hop hornbeam	S, T	C
Oxalis spp.	wood sorel	H	O
Parthenocissus quinquefolia	Virginia creeper	H	O
Phalaris arundinacea	reed canary grass	H	C
Pinus resinosa	red pine	T	U
Poa pratensis	Kentucky blue grass	H	C
Podophyllum peltatum	may apple	H	O
Polygonum spp.	smartweed	H	C
Populus deltoides	cottonwood	S,T	O
Potentilla recta	sulfur cinquefoil	H	U
Prunus serotina	wild black cherry	S,T	O
Quercus alba	white oak	T	C
Quercus rubra	red oak	T	O
Rhus spp.	sumac	S	O
Ribes missouriense	wild gooseberry	S	O
Rosa multiflora	multiflora rose	S	O
Rubus occidentalis	black raspberry	S	O
Rubus pensylvanicus	yankee blackberry	S	O
Rudbeckia hirta	black-eyed susan	H	C
Rumex crispus	curly dock	H	C
Salix nigra	black willow	T	O
Sanguinaria canadensis	bloodroot	H	U
Sanicula gregaria	clustered black snakeroot	H	A
Setaria glauca	foxtail	H	C
Spartina pectinata	slough cordgrass	H	O
Solidago canadensis	goldenrod	H	C
Symphoricarpos orbiculatus	coralberry	S	O
Tilia Americana	basswood	T	O
Toxicodendron radicans	poison ivy	H	C
Trifolium pratense	red clover	H	C
Ulmus Americana	American elm	T	O
Ulmus rubra	slippery elm	S,T	C
Urtica dioica	stinging nettle	H	O
Uvularia grandiflora	bellwort	H	U
Verbascum thapsus	common mullein	H	O
Viola spp.	violet	H	O
Vitus vulpine	frost grape	V	O

[1] - identified on June 15, 2000 and July 13, 2000
[2] - H – herb S – shrub T – tree V – vine
[3] - A – abundant C – common O - occasional U – uncommon

Table 4-6. Representative List of Mammals Potentially Occurring at Project Site

COMMON NAME	SCIENTIFIC NAME
Marsupials	
opossum	*Didelphis marsupialis*
Insectivores	
shortail shrew	*Blarina brevicauda*
least shrew	*Cryptotis parva*
eastern mole	*Scalopus aquaticus*
Bats	
eastern pipistrel	*Pipistrellus subflavus*
little brown myotis	*Myotis lucifugus*
Indiana bat	*Myotis sodalis*
big brown bat	*Eptesicus fuscus*
red bat	*Lasiurus borealis*
Carnivores	
bobcat	*Lynx rufus*
coyote	*Canis latrans*
gray fox	*Urocyon cinereoargenteus*
red fox	*Vulpes fulva*
raccoon	*Procyon lotor*
striped skunk	*Mephitis mephitis*
Rodents	
white-footed mouse	*Peromyscus leucopus*
deer mouse	*Peromyscus maniculatus*
groundhog	*Marmota monax*
beaver	*Castor canadensis*
eastern chipmunk	*Tamias striatus*
southern flying squirrel	*Glaucomys volans*
eastern gray squirrel	*Sciurus carolinensis*
eastern fox squirrel	*Sciurus niger*
Rabbits/Hares	
eastern cottontail	*Sylvilagus floridanus*
Hoofed Mammals	
whitetail deer	*Odocoileus virginianus*

Table 4-7. Bird Species Observed at the Project Site (page 1 of 3)

COMMON NAME	SCIENTIFIC NAME
Wading Birds	
great blue heron	*Ardea herodias*
killdeer*	*Charadrius vociferous*
sora*	*Porzana Carolina*
upland sandpiper*	*Partramia longicauda*
American woodcock*	*Philohela minor*
Ducks or Swimming Birds	
American coot*	*Fulica Americana*
double-crested cormorant *	*Phalacrocarax auritus*
gadwall*	*Anas strepera*
Canada goose*	*Branta Canadensis*
common loon*	*Gavia immer*
mallard*	*Anas platyrhynchos*
pintail*	*Anas acuta*
blue-winged teal*	*Anas discors*
American widgeon *	*Anas Americana*
wood duck*	*Aix sponsa*
pie-billed grebe*	*Podilymbus podiceps*
Gulls	
herring gull*	*Larus argentatus*
ring-billed gull *	*Larus delawarensis*
Game Birds	
ring-necked pheasant*	*Phasianus colchicus*
bobwhite quail*	*Colinus virginianus*
wild turkey*	*Meleagris gallopavo*
Birds of Prey	
bald eagle*	*Haliaetus leucocephalus*
northern harrier *	*Circus cyaneus*
broad-winged hawk*	*Buteo platypterus*
Cooper's hawk*	*Accipiter cooperii*
red-tailed hawk*	*Buteo jamaicensis*
sharp-shinned hawk*	*Accipiter striatus*
American kestrel*	*Falco sparverius*
common nighthawk*	*Chordeiles minor*
osprey	*Pandion haliaetus*
barred owl*	*Strix varia*
eastern screech owl*	*Otus asio*

Table 4-7. Bird Species Observed at the Project Site (Page 2 of 3)

COMMON NAME	SCIENTIFIC NAME
great-horned owl*	*Bubo virginianus*
turkey vulture	*Cathartes aura*
Passerines	
red-winged blackbird	*Agelaius phoeniceus*
eastern bluebird *	*Sialia sialis*
indigo bunting	*Passerina cyanea*
northern cardinal	*Cardinalis cardinalis*
gray catbird	*Dumetella carolinensis*
yellow-breasted chat*	*Icteria virens*
black-capped chickadee	*Parus atricapillus*
brown-headed cowbird*	*Molothrus ater*
brown creeper*	*Certhia americana*
American crow	*Corvus brachyrhynchos*
acadian flycatcher*	*Empidonax virescens*
great-crested flycatcher*	*Myiarchus crinitus*
blue-gray gnatcatcher*	*Polioptila caerulea*
American goldfinch*	*Carduelis tristis*
common grackle*	*Quiscalus quiscula*
rose-breasted grosbeak*	*Pheucticus ludovicianus*
blue jay	*Cyanocitta cristata*
eastern kingbird*	*Tyrannus tyrannus*
golden-crown kinglet*	*Regulus satrapa*
horned lark*	*Eremophila alpestris*
purple martin*	*Progne subis*
eastern meadowlark*	*Sturnella magna*
northern mockingbird*	*Mimus polyglottos*
white-breasted nuthatch*	*Sitta carolinensis*
northern oriole*	*Icterus galbula*
orchard oriole*	*Icterus spurious*
ovenbird*	*Seiurus aurocapillus*
eastern phoebe*	*Sayornis phoebe*
American redstart*	*Setophaga ruticilla*
American robin*	*Turdus migratorius*
chipping sparrow*	*Spizella passerina*
field sparrow *	*Spizella pusilla*
house sparrow *	*Passer domesticus*

Table 4-7. Bird Species Observed at the Project Site (Page 3 of 3)

COMMON NAME	SCIENTIFIC NAME
savannah sparrow *	*Passerculus sandwichensis*
song sparrow *	*Melospiza melodia*
vesper sparrow *	*Pooecetes gramineus*
eastern starling*	*Sturnus vulgaris*
barn swallow*	*Hirundo rustica*
cliff swallow*	*Petrochelidon pyrrhonota*
tree swallow*	*Iridoprocne bicolor*
chimney swift*	*Chaetura pelagica*
scarlet tanager*	*Piranga olivacea*
brown thrasher*	*Toxostoma rufum*
wood thrush*	*Hylocichla mustelina*
tufted titmouse	*Parus bicolor*
rufous-sided towhee*	*Pipilo erythrophthalmu*
veery*	*Catharus fuscescens*
red-eyed vireo	*Vireo olivaceus*
warbling vireo*	*Vireo gilvus*
yellow-throated vireo*	*Vireo flavifrons*
blue-winged warbler*	*Vermivora pinus*
cerulean warbler*	*Dendroica cerulea*
prothonotary warbler*	*Protonotaria citrea*
Louisiana waterthrush*	*Seiurus motacilla*
cedar waxwing*	*Bombycilla cedrorum*
eastern wood pewee*	*Contopus virens*
house wren	*Troglodytes aedon*
common yellowthroat*	*Geothlypis trichas*
Non-Passerine Birds	
mourning dove*	*Zenaida macroura*
ruby-throated hummingbird	*Archilochus colubris*
downy woodpecker	*Picoides pubescens*
hairy woodpecker *	*Picoides villosus*
red-bellied woodpecker	*Melanerpes carolinus*
red-headed woodpecker *	*Melanerpes erythrocephalus*
black-billed cuckoo*	*Coccyzus erythropthalmus*
yellow-billed cuckoo*	*Coccyzus americanus*
belted kingfisher*	*Ceryle alcyon*
northern flicker*	*Colaptes auratus*

*Observed by others (Kent 1991, 1992, 1994)

Table 4-8. Reptiles and Amphibians Potentially Occurring at Project Site

COMMON NAME	SCIENTIFIC NAME
REPTILES	
Turtles	
common map turtle	*Graptemys geographica*
ornate box turtle	*Terrapene ornata ornata*
smooth softshell	*Apalone mutica mutica*
snapping turtle	*Chelydra serpentina*
western painted turtle	*Chrysemys picta bellii*
Skinks	
five-lined skink	*Eumeces fasciatus*
Snakes	
black rat snake	*Elaphe obsoleta obsoleta*
eastern garter snake	*Thamnophis sirtalis sirtalis*
eastern hognose snake	*Heterodon platirhinos*
northern water snake	*Nerodia sipedon sipedon*
prairie kingsnake	*Lampropeltis callegaster callegaster*
prairie ringneck snake	*Diadophis punctatus arnyi*
timber rattlesnake	*Crotalus horridus*
yellowbelly water snake	*Nerodia erythrogaster flavigaster*
AMPHIBIANS	
Frogs	
Blanchard's cricket frog	*Acris crepitans blanchardi*
bullfrog	*Rana catesbeiana*
gray treefrog	*Hyla versicolor*
green frog	*Rana clamitans melanota*
northern leopard frog	*Rana pipiens*
northern spring peeper	*Pseudacris crucifer*
western chorus frog	*Pseudacris triseriata triseriata*
Toads	
American toad	*Bufo americanus americanus*

4.2.3 Aquatic Ecology

The aquatic environments of Coralville Lake offer habitat for a wide range of biota, ranging from phytoplankton, epiphytic algae, zooplankton, benthic invertebrates, unionid mussels, and fish. The fishery is represented by game and non-game fish species, and provides a source of recreation for the public. Fish species in the reservoir (game fish species and non-game fish species) collected and identified in a survey conducted by Iowa Conservation Commission Fishery Biologists in 1976 are presented in Table 4-9. These species are common to fisheries such as Coralville Lake, which are subjected to frequent water level manipulation. Game species, however, represented a minority of the total fish sample in the 1976 survey, both in terms of biomass and total numbers.

Several problems have been identified which have limited the expansion of game fish populations in Coralville Lake including:

- lack of both quality and quantity of the forage base for game fish predation;
- extreme water fluctuations created by both seasonal hydraulic regulations and flooding;
- dissolved oxygen fluctuations created by runoff and changes in lake water volume;
- turbidity due primarily to suspended materials;
- inadequate spawning areas for specific species;
- stress created and resulting from crowding by non-game fish; and
- lack of benthic diversity/structural features due to sedimentation.

Freshwater (unionid) mussels may also occur in Coralville Lake in the vicinity of the project area. Representative species likely to occur in the area are presented in Table 4-10.

4.2.4 Wetland Resources

Wetlands of the project area were investigated using a variety of sources of information including:

- 7.5 minute USGS topographic maps,
- 7.5 minute National Wetland Inventory (NWI) maps,
- Johnson County soil survey,
- 1993 aerial photos identifying flood limits, and
- flood stage-duration data from the operation of the Coralville Lake dam.

Wetlands within the project area are identified in Figure 4-2. Coralville Lake, the only wetland feature mapped by the National Wetland Inventory, was mapped as L1UBHh (Lacustrine, limnetic, unconsolidated bottom, permanently flooded, impounded), and represents a deep open water system typical of Lacustrine systems.

Table 4-9. Representative Fish Species in Coralville Lake

GAME SPECIES	NON-GAME SPECIES
channel catfish (*Ictalurus punctatus*)	carp (*Cyprinus carpio*)
flathead catfish (*Pylodictis olivaris*)	shiners (*Notropis* spp.)
black bullhead (*Ameiurus melas*)	creek chub (*Semotilus atromaculatus*)
northern pike (*Esox lucius*)	carpsucker (*Carpiodes* spp.)
white bass (*Morone chrysops*)	buffalo (*Ictiobus* spp.)
largemouth bass (*Micropterus salmoides*)	redhorse (*Moxostoma* spp.)
white crappie (*Pomoxis annularis*)	white sucker (*Catostomus commersoni*)
black crappie (*Pomoxis nigromaculatus*)	
green sunfish (*Lepomis cyanellus*)	
bluegill (*Lepomis macrochirus*)	
orange-spotted sunfish (*Lepomis humilis*)	
walleye (*Stizostedion vitreum*)	

Source: U.S. Army Corps, 1993

Table 4-10. List of Potential Unionid Mussel Species at Coralville Lake

COMMON NAME	SPECIES NAME
paper pondshell	*Utterbackia imbecillis*
flat floater	*Andonta suborbiculata*
giant floater	*Pyganodon grandis*
lilliput	*Toxolasma parvus*

Source: Cummings and Mayer , 1992

In addition to the use of the above materials, an on-site delineation using the Routine Approach of the 1987 Corps Wetland Delineation Manual was performed to more accurately identify potential jurisdictional wetlands (Walsh, 2000). This manual is used by Federal, state, and non-governmental entities alike as the national standard to identify and delineate jurisdictional wetlands. Potential wetlands were identified by establishing observation plots in suspected wetland areas and by examining each plot for the presence of hydric soils, hydrophytic (wetland) vegetation, and wetland hydrology. As a result of this field investigation, several Palustrine forested wetlands (PFO1A-Palustrine, forested, broadleaved deciduous, temporarily flooded) were identified, as illustrated in Figure 4-2. Though not delineated, additional wetlands are expected to be associated with the two ravines in the southeastern portion of the site.

In general, these wetlands are found within small swales and drainage ways extending into the upland from the lake. Vegetation typical of these areas included such species as reed canary grass (*Phalaris arundinacea*), black willow (*Salix nigra*), rice cutgrass (*Leersia oryzoides*), anemone (*Anemone canadensis*), wood nettle (*Laportea canadensis*), silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), and a variety of sedges (*Carex* spp.).

These wetlands perform a variety of functions including shoreline stabilization, flood storage, water quality enhancement, and wildlife habitat support. They are generally low in floristic quality (i.e., not uncommon) and represent a resource that is relatively common within the Coralville Lake project and also within the region.

4.2.5 Threatened and Endangered Species

A consideration of the potential occurrence of state or Federally threatened or endangered species was conducted by correspondence with the Iowa Department of Natural Resources (IDNR) and the United States Fish and Wildlife Service (USFWS)(Appendix A). Table 4-11 lists those species identified by these resource agencies as potentially occurring in the project area's county (Johnson County). In addition, the potential occurrence of listed species was considered as part of the field reconnaissance of the project area. None of the species listed in Table 4-11 was observed on-site during either reconnaissance trip. However, an exhaustive inventory of vegetation and wildlife occurring within the project area was not completed. Consequently, given suitable habitat, such species may occur within the project area.

Generalized habitat requirements for most species listed in Table 4-11 appear to be present on the site. However, habitat for the eastern prairie fringed orchid is not present on the site, as this species prefers mesic to wet prairies.

Bald eagle may utilize woodlands and snags within the shoreline area to perch or roost during the winter months. Indeed, bald eagles have been observed to periodically roost in trees along the shoreline of Coralville Lake during winter months. Although not listed in the state or Federal threatened or endangered species lists, the cerulean warbler (*Dendroica cerulea*) has been put on special concern lists in Partners in Flight because it has shown decreasing populations since 1966. Conservation measures, such as research on habitat and breeding requirements are in progress to better understand the warbler and to determine its eligibility for listing (Cerulean Warbler Atlas Project www.birdsource.org/cewap/cewaspec.htm). Given the presence of trees with cavities or exfoliating bark, there is the potential that Indiana bat may utilize the project area. However, use of the area by Indiana bat (if they are present), is likely to occur during the spring and summer months in conjunction with the establishment of maternal roost colonies. Foraging by Indiana bat may also occur along the shoreline of the lake or among the trees.

Showy ladies' slipper, a state listed plant species, is a species typically associated with protected ravines and slopes. Such habitats do occur on the project site to the north of the proposed development (Alternatives 1 and 2) and within the narrow ravines in the southern portion of the site.

Running pine, listed by the state as endangered, is typically associated with dry woods, thickets, and clearings. Such habitats are found within the project area in the vicinity of the former Camp Daybreak (vicinity of well shown on Figure 4-2) and along dry ridges.

Muskroot and crowfoot clubmoss are two other species of concern that were mentioned in correspondence from the IDNR (Table 4-12). These species, however, are not formally listed (and are therefore not granted formal protection) by either the IDNR or USFWS. Habitat for these species may occur within the narrow drainage ways in the southern portion of the site (Fig 2-1).

Table 4-11. State and Federally Listed Species

NAME	STATUS	HABITAT
Indiana bat (*Myotis sodalis*)	Endangered (Federal, State)	Caves, mines, small stream corridors with well developed riparian woods, upland forests[1]
bald eagle (*Haliaeetus leucocephalus*)	Threatened (Federal) Endangered (State)	Wintering[1]
eastern prairie fringed orchid (*Plantanthera leucophaea*)	Threatened (Federal) Endangered (State)	Mesic to wet prairies[1]
running pine (*Lycopodium clavatum*) [2]	Endangered (State)	Dry woods, thickets and clearings[2,3]
showy ladies' slipper (*Cypripedim reginae*) [2]	Threatened (State)	Wet woodlands and margins of bogs and swamps[2,3]

[1]USFWS Correspondence
[2]IDNR Correspondence
[3]Fernald, 1950

Table 4-12. Species of Special Concern

NAME	STATUS	HABITAT
muskroot *(Adoxa moschatellina*)	Rare	Moist, often mossy places in woods and rocky slopes
crowfoot clubmoss (*Lycopodium digitatum*)	Rare	Bases of moist wooded slopes, often on acidic substrates
cerulean warbler (*Dendroica cerulea)*	NL*	Mature deciduous forests near streams or lakes

*Not Listed
Source: IDNR Correspondence and Fernald, 1950

4.3 Water Resources

4.3.1 Surface Water Resources

The project site is adjacent to Coralville Lake, which is the dominant surface water feature in the area (see Figures 2-1 and 4-2). Coralville Lake dam was constructed nine miles north of Iowa City, upstream of the junction of the Iowa and Mississippi Rivers, to control flooding in the Iowa River Basin. The dam was authorized in 1938 and was put into operation in 1958. The watershed draining to Coralville Lake includes 3,084 square miles. The maximum storage capacity of the lake is 475,000 acre-feet. The normal range of lake elevations is between 679-686 msl (depending upon the time of year).

Ephemeral drainage ways and stream channels are also found within the project area. These drainage ways, located in the southern and north-central portion of the site (south of Scenic Drive), collect and convey runoff from upland areas to on-site wetlands and Coralville Lake. Several water quality problems have been noted at Coralville Lake. During periods of high runoff, dissolved and suspended solids create excessive turbidity in the lake. In addition, serious deficiencies in dissolved oxygen concentrations occur annually below the lake's 5-foot depth, generally coinciding with heavy algal blooms. Phosphate concentrations in the lake exceed EPA recommendations for Class A and B warm waters. Additionally, DDT has been detected in surface water and sediments in excess of Federal recommendations (U.S. Army Corps, 1977).

4.3.2 Groundwater Resources

Groundwater from the Silurian and Devonian aquifers, consisting of limestone and dolomite with minor shale beds, supplies the vast majority of domestic water needs in east-central Iowa, including the general project area. The Silurian aquifer in east-central Iowa is confined from below by Upper Ordovician, Maquoketa Formation shales, and from above by the Kenwood Member of the Wapsipinicon Formation and the Otis and Bertram formations.

Water moves through the Silurian aquifer due, in part, to a complex distribution of porous and dense carbonate facies. One horizon occurs approximately 70 to 105 feet above the base of the Silurian and is the most consistently productive water-yielding unit in the area. Yields to individual wells completed in the Silurian and Devonian carbonate aquifers vary from less than 10 to about 500 gallons per minute.

Water analyses from the Devonian and Silurian aquifers indicate that they are of similar chemical quality at most locations. However, they may commonly contain concentrations of sulfate that exceed 1,000 milligrams per liter.

According to Iowa Geological Survey Bureau records, a water well located on the project site is 185 feet deep and produces from the upper portion of the Silurian aquifer. Most wells in the surrounding area produce from deeper zones, most likely from the lower Silurian aquifer. Water quality data is not currently available for this well.

4.4 Floodplains

Flood areas within the project area are influenced and controlled artificially by the regulation of Coralville Lake. The regulatory (100-year) floodplain established for the project area is set at an elevation of 713 feet msl (above mean sea level) as shown in Figure 4-2.

Operational procedures of Coralville Dam establish variable conditions and are based on objectives relating to flood control, protection of lands downstream, pollution abatement, and conservation of fish and wildlife. Conservation storage within Coralville Lake is variable with each season but is generally provided between elevations 679 and 686 feet msl (U.S. Army Corps, undated). Major floods occur when reservoir elevations exceed 707 feet msl. Flood elevations associated with the 1993 flood, however, were documented at 716.75 feet msl and are indicated in Figure 4-2.

4.5 Social Environment

4.5.1 Recreation

The Coralville Lake area provides a number of recreational opportunities for the surrounding communities and for the region at large. The Corps provides recreation areas and allows certain activities at Coralville Lake including picnicking, boating, fishing, camping, swimming, hunting, hiking, and water sports. Recreation areas within the Corps property at Coralville Lake include non-Federal recreation developments and private concessionaire developments. Non-Federal recreation developments include Lake Macbride State Park, which is operated by the State Parks Division of the Iowa Department of Natural Resources, and several camping areas around the lake. Among the private concessionaire developments are marinas, docks, and camp sites. Representative use levels at selected recreational areas are presented in Table 4-13.

Table 4-13. Selected Visitor Use at Coralville Lake
(Units in Visitor Days)

LOCATION	FY 1998			FY 1999		
	TOTAL	OVERNIGHT	DAY USE	TOTAL	OVERNIGHT	DAY USE
Sugar Bottom	212,695	200,516	12,179	220,389	207,494	12,895
Lake Macbride	39,261	NA[1]	39,261	37,269	NA[1]	37,269
Jolly Roger Campground	80,414	76,813	3,601	86,105	82,607	3,498
Cottonwood	12,984	11,928	1,056	15,366	14,116	1,250
Sandy Beach Day Use	9,017		9,017	6,456		6,456

[1]Not Available
Source: Monthly Visitation Reports, 1998 & 1999;U.S. Army Corps, Coralville Lake Project, Rock Island District

Additionally, the Macbride Nature Recreation Area and Raptor Center (operated by the University of Iowa and Kirkwood Community College), located immediately across the lake from the project site handles approximately 2,500 to 3,000 people during the year in small groups (i.e., 8-12 people) disbursed throughout the 1,000-acre site (Dave Conrads, personal communication).

Recreation areas closest to the site are the Lake Macbride State Park, the Macbride Nature Recreation Area and the Jolly Roger Campground. Lake Macbride State Park includes campgrounds, beaches, and boat rentals. The Jolly Roger Campground includes boat ramps, mooring, fuel, and storage as well as camping and provisions.

4.5.2 Land Use and Zoning

The Corps property subject to this evaluation is located in Johnson County, approximately two miles north of the City of North Liberty, Iowa. The 106-acre site is in an unincorporated area and is surrounded by low-density residential developments, undeveloped land under private ownership, and Corps-owned property. Recent aerial photographs (1992 and 1993) and a field reconnaissance of the area indicated that there are no agricultural lands either on-site or on immediately surrounding properties.

Several residences are located north and west of the site in the Cumberland Ridge Subdivision. Existing land uses near the site are shown on Figure 4-3. There are 17 single-family residences in this subdivision, 12 of which are located on the north side of 200th Street NE and Scenic Drive, which borders the site on the north side. North of Cumberland Ridge Subdivision are two residential subdivisions fronting Scales Bend Road. Both subdivisions are partially developed and are comprised of single-family lots smaller than those in the Cumberland Ridge Subdivision. There is also a seasonal dwelling located adjacent to the site (on the west side just southeast of the intersection of 200th St. and Scales Bend Road). The Jolly Roger Campground is located further north at the terminus of Scales Bend Road. Coralville Lake abuts the site to the east and south. Lake Macbride State Park is located directly across the reservoir to the east and Macbride Nature Recreation Area is located south of the state park.

Land immediately west and south of the site is undeveloped; however, the land immediately southwest of the site is platted as the Sherwood Forest Subdivision. This tract is undeveloped and currently includes hiking trails with interpretive signage. Access to Sherwood Forest is provided off of 200th Street NE and Scales Bend Road. Property across from the site, on the western side of Scales Bend Road, is primarily undeveloped, with a few single-family residences located on large lots. Land to the west of Scales Bend Road has had a road constructed on it and the developer has submitted a plat to the county. The plat has not been approved at this time.

The Corps governs land use on Federally-owned property. The Corps developed the Coralville Lake Master Plan to designate uses on Corps property surrounding the lake. Under the current Master Plan (1977), the site is identified as one of seven out-grant parcels at the Coralville Lake Project. In addition, the Master Plan identifies Corps "zoning" for the majority of the 106-acre tract as recreation/intensive use, which is described in the 1977 Revised Corps Master Plan as follows:

> Operations: Recreation/Intensive Use lands are those allocated for developments as public use areas for intensive recreational activities, including areas for concession and quasi-public development.

The 1998 Johnson County Land Use Plan and the 1996 Johnson County North Corridor Land Use Plan provide planning goals and objectives for future growth and development in the county and include future land use plans. The proposed site is located in what is known as the "North Corridor" area of Johnson County, termed as such for special consideration regarding planning issues. The County adopted the 1996 North Corridor Development Plan for the area of Johnson County generally located between Highway 1 on the eastern side and State Highway 965 on the west. The area extends north from Iowa City and Coralville and east of North Liberty.

According to the Johnson County Land Use Plan, this area has experienced rapid growth in recent years. The Plan identifies the following policies: "…limit residential growth; provide for orderly growth to best protect the environment and provide rural residents with efficient rural services; prepare a Corridor Development Plan; develop standards for development; and identify corridor boundaries." For future planning purposes, the Johnson County North Corridor Land Use Map generally designates areas of the county for certain land use types. The Plan shows the proposed project site as RS Suburban Residential and Flood Plain. The Jolly Roger Campground is identified as A2 Resort in the Plan. RS Suburban Residential and Flood Plain are Land Use designations and, as such, are not the same as the zoning district classifications of A3-Flood Plain and RS-Suburban District.

The regulatory zoning districts adopted by Johnson County for areas surrounding the project site are consistent with the land uses identified in the North Corridor Land Use Plan. Johnson County has zoned land surrounding the project site as RS-Suburban District, which permits low-density residential uses and other compatible uses such as schools, community facilities, churches, and golf courses (Figure 4-3). The County has zoned the project site A3-Flood Plain District, which permits farm and recreational uses and preserves or reservations. Although the County has applied this designation, local planning and zoning enforcement does not apply to Federally owned property. As in the past, Johnson County zoning officials will continue to be contacted to obtain their views on land use issues during updates of the Project Master Plan.

4.5.3 Demographics

The project site is located in an unincorporated area of Johnson County that is within Penn and Big Grove Townships. The nearest incorporated area is North Liberty, located approximately two miles south of the site. Tables 4-14 and 4-15 provide a summary of the population and other demographic characteristics of these and other areas.

Table 4-14. Population

	1980	1990	1998
Johnson County	81,717	96,116	102,724
Iowa City	50,508	59,738	60,897
Coralville	7,687	10,347	12,688
North Liberty	2,046	2,926	4,562
Penn Township	5,024	8,314	NA
Big Grove Township	2,213	2,462	NA

Source: U.S. Census Bureau, 1990; Iowa State University, Department of Economics, "Iowa Profiles, Public Resources Online"

Table 4-15. 1990 Population Characteristics

	MEDIAN AGE	RACE (PERCENT OF TOTAL)			MEDIAN HOUSEHOLD INCOME
		WHITE	BLACK	OTHER	
Johnson County	27.1	93.3%	2.1%	5.6%	$27,862
Iowa City	24.9	91.4%	2.5%	6.1%	$24,565
Coralville	28.7	92.3%	3.8%	3.9%	$26,599
North Liberty	28.2	99.4%	0	0.6%	$27,091
Penn Township	27.6	98.7%	0.4%	0.9%	$40,737
Big Grove Township	28.8	99.4%	0	0.6%	$36,141
State of Iowa	34	96.6%	1.8%	1.6%	$26,229

Source: U.S. Census Bureau, 1990

Nearly 60% of the Johnson County population resided in Iowa City in 1998 according to Census Bureau estimates. The County has continued to experience a substantial increase in population since 1980, growing by 26% between 1980 and 1998. Considerable population increases were also experienced in North Liberty and Coralville during this period. The 1990 Census also shows that Johnson County contained a younger population with a more diverse population and a higher median household income

than the state of Iowa overall. Penn and Big Grove Townships, compared to the county overall, had a less diverse population and much higher median incomes.

4.5.4 Public Facilities and Services

Public facilities and services at the site and the surrounding area are limited, given the area's rural nature. Water and sewer services are provided on-site for the single-family residences on the adjacent properties by way of wells and on-site septic systems. Emergency services are provided in the area by the North Liberty Fire Department and Johnson County Sheriff's office. Public roads, such as Scales Bend Road and 200th Street, are maintained by Johnson County. Private roads, such as Scenic Drive (Cumberland Ridge Road), are maintained by private property owners, while roads on Federal lands are maintained by the Corps and other appropriate agencies.

4.5.5 Existing Traffic Conditions

Vehicular access to the site is provided from Scales Bend Road and 200th Street NE, which is approximately two (2) miles from the intersection of Scales Bend Road and Iowa Route 965 near North Liberty. Scales Bend Road consists of a chip and seal surface primarily serving adjoining residential development as well as recreational destinations such as the Jolly Roger Campground at the north terminus of Scales Bend Road. Two-hundredth Street NE is a gravel surface from the intersection of Scales Bend Road eastwardly to a connection with Scenic Drive that carries traffic from 17 residences in the immediate area of the proposed site. The entrance to the site is on 200th Street NE, approximately 700 feet east of Scales Bend Road.

Based on the traffic counts performed by the Iowa Department of Transportation in 1998, the Average Daily Traffic (ADT) volume along Scales Bend Road immediately north of its intersection with Iowa Route 965 was 1,510 vehicles per day (vpd). Traffic volume along Scales Bend Road north of 200th Street NE was recorded at 720 vpd indicating a steady reduction in traffic on Scales Bend Road north of its intersection with Route 965 (Figure 4-4). Based on year-end and monthly visitation reports provided by the Corps, a significant percent of this 720 vpd was for visitors to the Jolly Roger Campground. An average yearly total of 83,260 visits were reported during Fiscal Year 1998 and Fiscal year 1999, and a monthly total of 3,069 for September 1998. These levels of visitation are equal to about 160 and 200 vpd, respectively. Existing traffic volumes along 200th Street NE are estimated to be 136 vpd based on eight vehicle trips per day from 17 single family dwelling units.

Northbound and southbound traffic along Scales Bend Road at the intersection with Route 965 was generally the same (approximately 710 vpd northbound and 800 vpd southbound) based on the 1998 Iowa DOT counts. Predominant turning movements were from southbound Scales Bend Road to southeast-bound Iowa Route 965 during the morning peak traffic periods and from northwest-bound Route 965 to northbound Scales Bend Road in the afternoon. These patterns are consistent with the home-to-work characteristics of the residential areas served. Peak hour traffic on Scales Bend Road occurred between 7:00 a.m. and 8:00 a.m. and was recorded to be the same for the 4:00 p.m. to 5:00 p.m. and 5:00 p.m. to 6:00 p.m. hours. A total of 31 accidents were reported along Scales Bend Road during a 12-year period from 1987 through 1998.

Road performance standards have recently been established by Johnson County for the purpose of evaluating re-zonings and new subdivisions. Generally, these standards include:

> *Gravel Roads:* No re-zonings or subdivisions shall be approved on gravel roads with a projected traffic volume greater than 300 vehicles per day, unless improvement of the road is scheduled within the next two (2) years of the adopted Johnson County five-year road improvement plan.
>
> *Oiled Chip Seal Roads:* No re-zonings or subdivisions shall be approved on oiled chip seal roads with a projected traffic volume greater than 1,000 vehicles per day unless improvement of the road is scheduled within the next two (2) years of the adopted Johnson County five-year road improvement plan.

Based on traffic counts performed by the Iowa Department of Transportation in 1998, a portion of Scales Bend Road from Iowa Route 965 to a point south of 200th Street NE already exceeds the above standards established for an oiled chip seal road. In addition, over 150 approved but undeveloped lots are situated in this area that would more than double the traffic allowed under the current roadway performance criteria.

4.6 Noise

When characterizing noise, it is useful to differentiate between several general terms:

- *Natural Ambient Sound Level:* The natural ambient sound level is comprised of the natural sound conditions in a given location, which exist in the absence of any human-produced noises. These conditions are actually comprised of many natural sounds, near and far, which often are heard as a composite, not individually.
- *Background Sound Level:* This is the sound level that can be measured in those situations where it is not possible to measure the natural ambient sound level with certainty because of high levels of human-caused sound, or where it is prohibitively expensive to measure natural ambient sound levels.
- *Noise:* Noise is frequently defined as an unwanted or undesired sound, often unpleasant in quality or intensity. This makes noise a subjective term and pushes society to address which sounds or aspects of sound constitute unwanted interruptions in specific situations. Noise is often a byproduct of desirable activities or machines (Komanoff and Shaw, 2000).

In general, noise generated by a given source is influenced by such factors as the distance of the receptor from the source, ground surface (soft or hard), and terrain. Other important factors include vehicle volume, mix, and speed.

Surrounding land uses within the project area consist of residential and recreational uses. Potential noise-sensitive receptors in the vicinity of the project corridor consist primarily of single-family residential units.

Table 4-16 presents a listing of representative noise levels from previous studies that contrast differing noise environments.

Noise levels under existing conditions consist of both natural ambient sounds (e.g., crickets, birds, etc.) as well as human-generated sounds (e.g., motorboat, jet ski, automobile, trucks, etc.). In order to characterize noise at the site, a noise analysis was performed using known sources and reported information. Inputs to the analysis for vehicular generated noise on Scales Bend Road include such parameters as vehicle volume, mix, speed and ground surface type and are provided in Table 4-17. Additional non-traffic noise inputs are given in Table 4-18. The boating activity associated with camping activities at the site, under Alternatives 1 and 2, would be limited to canoes, rowboats and other non-motorized craft and is not included as a noise input.

Table 4-16. Representative Noise Levels[1]

Sound Source	Noise Level (dBA)
Air raid siren at 50 feet	120
On platform by passing subway train	100
On sidewalk by passing heavy truck or bus	90
Jet ski at 20 feet	80
On sidewalk by typical highway	80
On sidewalk by passing automobiles	70
Typical urban area background (busy office)	60
Intermediately populated beach	55
Typical suburban area background	50
Typical suburban area at night	40
Typical rural area at night	30

[1]Source: Komanoff and Shaw, 2000

Noise analyses of base conditions were performed using Traffic Noise Model (TNM), the recently updated traffic noise prediction model used by the Federal Highway Administration. This model was selected as it allows for an integrated modeling of multiple noise sources and it also integrates the effects of terrain, ground surface and distance. The model does not account for increased sensitivity to noises during the night. However, after dark activities should be limited to campfire events in the evening. These events would be over prior to normal summer bedtime hours. Therefore, no significant noise generating activities are anticipated during the nighttime hours and adjustments to the noise model were not made to account for this heightened sensitivity.

For the purposes of assessing noise related impacts for each alternative, four single-family residences and one location at the Macbride Nature Recreation Area were selected as "receptors" for consideration in this analysis. No field measurements of ambient noise levels were made. Each of these receptors is described in Table 4-19 and is illustrated in Figure 4-2. Each of these receptors was selected based on its proximity to the project and to potential noise sources. Receptor 1 was selected for its proximity to the entrance to the site, and its proximity to Scales Bend Road; Receptors 2-4 represented residential receptors along Scenic Drive, and Receptor 5 represented a potential receptor across the lake in the Macbride Nature Recreation Area.

It is recognized that noise levels do in actuality, fluctuate within the environment. Predicted noise levels are expressed in terms of Leq which represents the average acoustic energy over a given unit of time that would represent the same amount of energy as the actual fluctuating noise levels. Under existing conditions, noise levels were determined to range from a low of 23.5 dBA at Receptor No.4 to a high of 38.1 dBA at Receptor No. 5. Indeed, as is presented in Table 4-19, noise levels decreased with greater distances from Scales Bend Road. Noise levels at Receptor No. 5 were the highest as a result of intermittent noise emissions from boats on Coralville Lake.

Table 4-17. Vehicular Noise Model Inputs

SEGMENT	ADT	SPEED (MPH)	VEHICLE MIX[1] (percent)		
			P.C.	S.U.	M.U.
Scales Bend Rd. North	720	45	90.0	6.0	4.0
Scales Bend Rd. South	856	25	90.0	6.0	4.0
200th Street NE	136	15	90.0	6.0	4.0

[1] P.C.=passenger cars; S.U.=single unit trucks; M.U.=multi-unit trucks

Table 4-18. Non-vehicular Noise Model Inputs

LOCATION AND SOURCE	SOURCE DESCRIPTION	NOISE EMISSION LEVEL
Cabin and Beach Areas	Camper Activity	55dBA[1]
Center of Coralville Lake	Motorboat/Jet ski	80dBA[1]

[1]Source: Komanoff and Shaw, 2000

Table 4-19. List of Receptors Analyzed for Potential Noise Impacts

RECEPTOR NUMBER	LOCATION	PREDICTED EXISTING NOISE LEVEL (1 hour Leq in dBA)
1	Residence located at west end of Scenic Drive within Cumberland Road Subdivision	30.3
2	Residence located 1/3 distance along Scenic Drive from Receptor 1	29.6
3	Residence located 2/3 distance along Scenic Drive from Receptor 1	24.4
4	Residence located at east end of Scenic Drive within Cumberland Road Subdivision	23.5
5	Building located across lake within Macbride Nature Recreation Area	38.1

4.7 Cultural Resources

The project area is located on the boundary of the Southern Iowa Drift Plain and the Iowan Surface. The topography of this area is one of steeply rolling hills, level upland divides, stepped erosion surfaces, and dendritic drainage networks. A total of 52 previously recorded archaeological sites have been reported within 2 kilometers (km) of the project area. These include one historic farmstead and 51 prehistoric sites consisting of habitations, occupations, lithic scatters, and camps. One Paleo-Indian site, two Archaic, and three Woodland-era sites have been identified.

Numerous archeological surveys have been conducted at Coralville Reservoir in support of the Operation and Maintenance of the Coralville Reservoir project pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended. Four of these investigations have included portions of the current study area and have resulted in complete survey coverage of the area of potential effect (see Table 4-20).

A total of eight archeological sites have been documented in the study area (Table 4-21). Seven of these sites are prehistoric with components ranging from nondiagnostic lithic scatters to Archaic and Woodland time periods. None of these sites, however, is eligible for listing on the National Register of Historic Places (NRHP) (R & C #870652050 and 991092031).

Historically, the area remained undeveloped until the late 1800's when Mr. Joseph Denison acquired it in 1889. Site 13JH923 was identified as an historic site that represents a typical turn-of-the-century rural residence. A total of 583 artifacts were recovered during the excavation of Site 13JH923, consisting of historic ceramic, glass, and other domestic artifacts. Based on the dates of artifact manufacture and historic map data, the main period of site occupation is ca. 1900 to 1940s (Peterson, 1999). The site was not found to meet any pertinent criteria of significance and was therefore not found to be eligible for NRHP listing (SHPO R&C#: 991052031).

Table 4-20. Complete Survey Coverage of the Area of Potential Effect

R & C NUMBER	AUTHOR	DATE	TITLE	INVESTIGATION TECHNIQUE
770000500	Zalesky, James	1977	Collection of Surface Finds from East central Iowa. Submitted to Iowa State University Archaeological Laboratory, Ames, IA.	Shoreline Surface Survey
820252120	McCully, Doyle W.	1982	Letter Report: Girl Scout Building Construction, Coralville Reservoir. Corps of Engineers, Rock Island, IL Submitted to SHPO, Des Moines, IA	Subsurface Testing
870652050	Overstreet, David F., Paul L. Lorenz Jr. and Carol Rosen	1987	Evaluation of the Archaeological Data Base, Coralville Lake, Iowa. Report of Investigations {186}. Great Lakes Archaeological Research Center, Inc. Milwaukee, WI	Surface Survey and Subsurface Testing
991012031	Peterson, Cynthia L.	1999	Phase I Intensive Archaeological Survey of ca. 171 Acres at Coralville Reservoir, Sections 31-32, T81N-R6W, and Section 22-23, T81N-R7W. Johnson County, IA.	Subsurface Testing

Table 4-21. Recorded Cultural Resource

Site	Site Type	NRHP Eligibility
13JH31	Archaic to Early Woodland	No
13JH49	Archaic to Middle Woodland	No
13JH139	Late Woodland habitation	No
13JH261	Woodland habitation	No
13JH394	Lithic scatter	No
13JH921	Lithic scatter	No
13JH 922	Lithic scatter	No
13JH 923	Historic rural residence	No

4.8 Solid/Special Waste

A preliminary screening for hazardous, toxic and radioactive waste (HTRW) was performed to determine the potential for solid and special wastes on the project site. This screening included a field reconnaissance of the site and a search of appropriate databases. A search of U.S. Environmental Protection Agency (USEPA) and Iowa Department of Natural Resources (IDNR) databases indicated that no identified HTRW sites are located within a two- mile radius of the project site. As a result of the lack of any identified HTRW sites and any evidence of activities at or near the site that would produce solid or special wastes, a Phase 1 HTRW assessment was not necessary.

Only one issue was noted on the site that could potentially involve the disposal of a special waste. An electrical transformer box of unknown age was identified on-site as a result of field reconnaissance. The Linn County Rural Electric Cooperative (REC) is responsible for the transformer and has subsequently confirmed that the transformer had previously been removed from the site and that the box is empty. Additionally, REC indicated that the transformer was tested and was not found to contain any PCBs.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Natural Resources

5.1.1 Soils and Geology

Only minor impacts to the project area soils will occur during construction activities. Soils will be disrupted and partially removed during excavation for building foundations, roads, and parking areas. Erosion of the site soils will be controlled using best management practices. No lasting impacts to the soils and geologic features of the project site are anticipated.

Prime and unique farmland soils do not occur on the site. Consequently, no impacts to prime or unique farmlands are anticipated with any project alternative.

5.1.2 Terrestrial Ecology

Potential impacts to the terrestrial ecosystem and its biota are associated with the degree of physical disturbance and habitat alteration associated with each project alternative. Estimated acreages of habitat converted by each project alternative are provided in Table 5-1. Alternative 1 would impact approximately 4.8 acres of habitat (primarily deciduous forest), whereas Alternative 2 would impact an estimated 2.3 acres of deciduous forest. The total number of acreages impacted, or the project footprint includes the land necessary to incorporate all of the features, including wastewater leach field. These numbers are only approximations given the fact that this EA is evaluating a level of use represented by the MYCA lease. In contrast, Alternative 3 results in a minimal loss of forest habitat (0.1 acre).

Habitat alteration would consist of the clearing of trees and other vegetation, and the conversion of primarily forest land to parking lots, structures, lodges, trails, and beach areas as well as land that would converted to accommodate the leach field. Consequences associated with this activity include the displacement of terrestrial biota, mortality of less mobile fauna, and loss of habitat that may be used for foraging or nesting.

Table 5-1. Summary of Impacts to Terrestrial Ecosystems

HABITAT	Coralville Lake Area		Alternative 1: MYCA Lease[2]		Alternative 2: Reduced Use[2]		Alternative 3: Alternate Use		Alternative 4: No Action	
	Acres	%	Acres	%[1]	Acres	%[1]	Acres	%[1]	Acres	%[1]
Forest/Savanna	8,312	43.0	4.1	3.8	2.3	2.2	0.1	0.1	-	-
Brushland	1,656	8.6	-	-	-	-	-	-	-	-
Grassland/Forbs	651	3.4	0.6	0.6	-	-	-	-	-	-
Native Prairie	88	0.5	-	-	-	-	-	-	-	-
Established Prairie	60	0.3	-	-	-	-	-	-	-	-
Wetlands	3,478	18.0	0.1	0.1	-	-	-	-	-	-
Agriculture	4,610	23.9	-	-	-	-	-	-	-	-
Developed	460	2.4	-	-	-	-	-	-	-	-
TOTAL	**19,315**	**100.0**	**4.8[2]**	**4.5**	**2.3[2]**	**2.2**	**0.1**	**0.1**	**0.0**	**0.0**

[1] Expressed as percent of total acres within project area (106).
[2]Total land area impacted includes the land necessary to incorporate all of the project features, including the wastewater leach field.

Potential tree impacts for each alternative are summarized in Table 5-2. Impacts associated with Alternatives 2 and 3 represent proportional reductions (i.e., 50 percent and 10 percent of the MYCA proposal, respectively) from the number of trees taken under Alternative 1 based on the reduced level of development proposed under each alternative. Alternative 1 would result in the loss of approximately 403 trees consisting primarily of hickories, honey locust, oaks, elms, and black cherry. Alternatives 2 and 3 would result in potential impacts to a similar assemblage of tree species, but at reduced levels (i.e., 202 and 39 trees, respectively). In contrast, as is indicated in Table 5-2, the number of large trees [i.e., >16" diameter at breast height (DBH)] potentially impacted with each alternative is relatively small (<30),

which apparently reflects the placement of the proposed development in approximately the same area as was occupied by the Girl Scout Camp. Vegetation in this area was observed to be characterized as a successional community comprised of numerous pole-sized tree species and invasive species.

Several concerns have been raised with regard to potential development of the site and the resultant impacts on fauna such as osprey, broad-winged hawk, and neotropical migrants. In particular, concerns have centered on the potential impacts of human activity upon osprey nesting success and reproductive levels. Poole (1989) suggests that humans lingering near nests may be a source of disturbance to osprey nesting. Despite the concerns expressed, no significant impacts to osprey nesting are anticipated with any of the alternatives for the following reasons:

1. The on-site platform, located in the northeastern portion of the site, is currently not in use for nesting.
2. Coralville Lake is frequently used by recreational watercraft, which represents a frequent form of disturbance to osprey.
3. The on-site osprey nest platform is located in an area which will not be developed with trails and will therefore, not be frequented by camp users.
4. The osprey nest platform is located more than 1,000 feet from the higher activity areas represented in Alternatives 1 and 2.

Broad-winged hawks have been reported to have successfully nested in an area north of the project site east of Scales Bend Road (see Figure 4-2). This species nests in hardwood forests that are in close proximity to clearings and wooded swamps. This species is somewhat secretive in its nesting habits, but has been known to nest in relative close proximity to human activities (Stokes and Stokes, 1989). Because of the distance of the project site from the nest area, the nature of the intervening land use (i.e., residential), and the abundance of other suitable woodland habitats within the region, no significant impacts to this species are anticipated with any project alternative.

Concerns regarding impacts to neotropical migrant species stem from habitat loss and from fragmentation of established woodlands. Because the amount of woodland that is converted is very small (with regard to the project site and Coralville Lake area), and is generally confined to an area of the site which has been previously disturbed (see Table 5-1), no significant impacts to this group of species is expected to occur with any project alternative.

Impacts to mammals, amphibians and reptiles are not expected to be significant and would most likely be the result of the displacement of more mobile fauna to adjacent areas. Some mortality of less mobile fauna may, however, occur as a result of construction-phase activities (e.g., earthwork, etc.). It should be recognized that most of the construction and day-to-day activities at the site would be in areas that have been previously disturbed. The northeast and southwest portions of the site are areas that have not previously been disturbed and would not be disrupted by construction activities from any of the alternatives under consideration.

Table 5-2. Summary of Impacts to Tree Species

Species name	Common name	ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		ALTERNATIVE 4	
		Total number	Trees >16" DBH	Total number	Trees >16" DBH	Total number	Trees >16" DBH	Total number	Trees >16" DBH
Acer negundo	boxelder	12	1	6	0	1	0	0	0
Acer saccharinum	sugar maple	6	1	3	0	0	1	0	0
Acer saccharum	silver maple	1	0	0	0	0	0	0	0
Acer spp.	maple	1	0	0	0	0	0	0	0
Carya spp.	hickory	103	1	51	1	10	0	0	0
Celtis occidentalis	hackberry	4	0	2	0	0	0	0	0
Fraxinus americana	white ash	22	2	11	1	2	0	0	0
Gleditisia triacanthos	honey locust	46	2	24	1	5	0	0	0
Juglans spp.	walnut	11	0	5	0	1	0	0	0
Morus rubra	red mulberry	3	0	1	0	0	0	0	0
Ostrya virginiana	hop hornbeam	28	0	14	0	3	0	0	0
Pinus resinosa	red pine	1	0	0	0	0	0	0	0
Populus deltoids	cottonwood	1	1	1	1	0	0	0	0
Populus spp.	aspen	7	1	4	0	1	0	0	0
Prunus serotina	black cherry	30	4	15	2	3	1	0	0
Quercus spp.	oak	49	12	25	6	5	1	0	0
Tilia Americana	basswood	17	1	9	1	2	0	0	0
Ulmus spp.	elm	59	0	29	0	6	0	0	0
	unknown	2	1	1	0	0	0	0	0
TOTAL		**403**	**27**	**202**	**13**	**39**	**2**	**0**	**0**

Total number based on trees >4" DBH
Source: MYCA, 1999

5.1.3 Aquatic Resources

Potential impacts to aquatic ecosystems are primarily associated with the construction of a beach area (Alternatives 1 and 2). These impacts consist of the deposition of fill material (sand) resulting in potential mortality to less mobile aquatic biota (benthic invertebrates, unionid mussels, etc.), and habitat alteration (silt and mud substrate to sand substrate). Alteration of these substrates may also induce some changes in local aquatic faunal composition to that commonly associated with sandy habitats (sunfish and minnow species, etc.). However, given the quality of the existing habitat and its relative abundance within Coralville Lake, no significant impacts to the aquatic ecosystem are anticipated with any project alternative. Alternative 1: MYCA Lease would result in the conversion of approximately 0.2 acre and Alternative 2 would result in the conversion of 0.1 acre of lacustrine deepwater habitat along the fringe of Coralville Lake. Discharge of fill material into these areas would require a Department of the Army permit pursuant to Section 404 of the Clean Water Act, and the issuance of a Water Quality Certification by the Iowa Department of Natural Resources pursuant to Section 401 of the Clean Water Act. No impacts to aquatic resources are anticipated with any other project alternative.

5.1.4 Wetland Resources

Environmental consequences of each of the project alternatives to wetlands are presented in summary form in Table 5-3. Alternative 1: MYCA Lease is anticipated to result in impacts to approximately 0.1 acre of palustrine forested broad-leaved deciduous wetlands (PFO1A) in conjunction with the construction of the lower trail and a tent platform. Impacts to this wetland could be avoided by shifting the trail and relocating the tent platform.

5.1.5 Threatened and Endangered Species

Although some conversion may occur to habitat potentially used by Federally listed species such as the Indiana bat and the bald eagle, no significant impacts to these species are anticipated with any project alternative. However, a bat survey may be required in advance of any tree clearing on the site should tree clearing be scheduled for the summer months. Alternatively, tree clearing may proceed unrestricted from November 1 to March 31 without any impact to the Indiana bat as any specimens potentially using the area will have migrated back to their hibernacula.

Similarly, the bald eagle is not expected to be impacted by any alternative as this species may only utilize the area during the winter for roosting. Removal of isolated trees and snags within the lodge area is not expected to adversely affect the bald eagle as numerous other suitable roost sites occur around the lake.

Table 5-3. Summary of Impacts to Wetlands and Deepwater Habitats

ALTERNATIVE	NATURE OF IMPACT		AREA OF IMPACT	SECTION 404 PERMIT REQUIRED
	Habitat	Impact		
1. MYCA Lease	Wetland Deepwater	Trail/tent platform construction Fill in lakeshore area for beach	0.1 acre* 0.2 acre	Yes, no mitigation required
2. Reduced Use	Wetland Deepwater	None Fill in lakeshore area for beach	- 0.1 acre	Yes, no mitigation required
3. Alternate Use	Wetland Deepwater	None None	-	No
4. No Action	Wetland Deepwater	None None	-	No

* Impacts to this wetland could be avoided by shifting the trail and relocating the tent platform such that the wetland is avoided altogether.

As discussed in Section 4.2.5, state listed species of concern such as muskroot, crowfoot clubmoss, and showy ladies' slipper are typically associated with moist or wet woods and rocky slopes. These species, however, have not been previously recorded at the site. Such species, if present on the site at all, are likely to be confined to the moist ravines and wooded drainage ways found south of Scenic Drive and in the southwestern portion of the site. These areas are not expected to be impacted by any alternative with the exception of the development of foot trails to enhance the interpretive value of the site. Placement of such trails may be conducted to limit the potential disruption to such habitats and to the rare species potentially associated with them.

Running pine, listed as endangered by the state of Iowa, is associated with dry woods and thickets. Given the recent history of disturbance of the site (i.e., the recent Girl Scout camp) and limited disturbance of habitat (<5 acres), no impact to this species is anticipated with any project alternative.

5.2 Water Resources

5.2.1 Surface Water Resources

Potential impacts to surface water resources of Coralville Lake may be addressed for the construction phase (i.e., short-term) and during the operation and maintenance phase (i.e., long-term).

Construction Phase

Potential short-term impacts associated with the construction phase may be anticipated to increase with the degree of development on the site, given its steep slopes and erodible soils. Such erosion from exposed soils may cause localized siltation and mortality of less mobile aquatic biota within the near-shore areas of Coralville Lake. Erosion of site soils may, however, be mitigated during construction activities using best management practices. Such measures may include the use of silt fences, buffer strips and other measures to minimize siltation within Coralville Lake.

Construction phase impacts are also anticipated to occur with the development of the beach areas under Alternatives 1 and 2. These impacts consist of the deposition of fill material (sand) resulting in locally increased turbidity levels and potential mortality to less mobile aquatic biota (benthic invertebrates, unionid mussels, etc). However, any increases in turbidity levels are anticipated to be short-term in duration. Approximately 0.2 acre of area would be impacted with Alternative 1, whereas 0.1 acre would be filled with Alternative 2. It is anticipated that beach construction would also require the issuance of a Section 404 permit from the Corps Regulatory Branch and a Section 401 Water Quality Certification from the State of Iowa. Due to the small acreage of impact a Nationwide 404 permit is anticipated. However, given the quality of the existing habitat and its relative abundance within Coralville Lake, no significant impacts to the aquatic ecosystem are anticipated with any project alternative.

Operational Phase

Replacement of natural soils with impermeable surfaces such as roofs and pavement will likely increase total runoff from the site. However, this increased runoff may be mitigated through the installation of appropriate site detention structures to prevent any appreciable impact to Coralville Lake.

Table 5-4. Summary of Impacts to Surface Water

ALTERNATIVE	CONSTRUCTION PHASE			OPERATIONAL PHASE IMPACTS
	Activity	Impact	Mitigative Measure	
1. MYCA Lease	Site clearing, beach construction	Siltation-moderate, Fill deposition in aquatic habitat	Erosion controls	No significant impacts
2. Reduced Use	Site clearing, beach construction	Siltation-minimal, Fill deposition in aquatic habitat	Erosion controls	None
3. Alternate Use	Site clearing	Siltation-none	Erosion controls	None
4. No Action	None	Siltation-none	None	None

Operational phase impacts may also be addressed with regard to wastewater treatment. Average daily wastewater flows produced by the activities planned under Alternative 1 amounted to 8,860 gallons per day (gpd). This level of wastewater flow places the proposed facility in the category of a semipublic sewage disposal system as defined in Chapter 64: Wastewater Construction and Operation Permits of the Iowa Administrative Code. This semipublic category provides criteria for systems exceeding the treatment and disposal of domestic sewage from more than four (4) dwelling units, or the equivalent of more than 16 individuals on a continual basis. Using standard water demand criteria outlined in Table 3-1, the level of service applicable to a private sewage disposal system defined in Chapter 64 would produce wastewater flows of between 800 gpd and 1200 gpd.

Site approval for a construction permit under the above criteria is based on the following separation distances from the proposed wastewater treatment and disposal facility.

- 1,000 feet from the nearest inhabitable residence, commercial building, or other inhabitable structure. If the inhabitable residence or commercial building is the property of the owner of the proposed treatment facility, or there is written agreement with the owner of the building, the separation criteria shall not apply. Any such written agreement shall be filed with the county recorder and recorded for abstract of title purposes, and a copy submitted to the Department of Natural Resources.
- 1,000 feet from public shallow wells.
- 400 feet from public deep wells.
- 400 feet from private wells.
- 400 feet from lakes and public impoundments.
- 25 feet from property lines and rights-of-way.

By applying the above separation distances from inhabited residences (1,000 feet), wells (400 feet) and lakes/public impoundments (400 feet) to the proposed site, no areas exist within the present boundaries for the installation of a wastewater disposal system under existing criteria for either Alternatives 1 (MYCA Lease) or 2 (Reduced Use)(Figure 5-1). The Iowa Department of Natural Resources' regulations provide for the application for a variance. If a variance is applied for and granted, a facility may be located on-site. Areas potentially available for an on-site treatment facility are indicated on Figure 5-1, should a 400-foot residential setback be granted by the IDNR. Based upon the suitability of local soils and the availability of suitable land area along the main access road, no significant impacts are anticipated with Alternatives 1 and 2. Compliance with applicable IDNR rules and regulations would be required under the terms of the lease.

Wastewater disposal facilities proposed under Alternative 3: Alternate Use consists of the installation of a single vault toilet near the main site entrance at 200th Street NE (see Figure 3-3). Removal of wastes generated at this location would be required on a periodic basis in conjunction with other contracted disposals. No significant impacts to surface waters are anticipated with either this alternative or the No Action Alternative.

5.2.2 Ground Water Resources

According to Iowa Geological Survey Bureau records, the well on the project site can produce 20 gallons per minute (gpm) with no appreciable drawdown. This equates to about 28,000 gallons per day, which should meet maximum demand for the development with any of the project alternatives. Although the records do not show the duration of the pumping test, the available information indicates that this single well can likely supply anticipated water needs without causing a draw-down in the aquifer beyond the boundaries of the property. Wells in the surrounding communities are completed in deeper water-bearing zones and should experience no impact from pumping of the project area well. Consequently, no impact to groundwater resources or to adjacent water supplies is anticipated with any project alternative.

No water quality information is currently available for the on-site well. During operation of the site facilities for each alternative, the water supply would be tested in accordance with Federal, state, and local regulations to assure a safe water supply.

5.3 Floodplains

No impacts to regulatory floodplains are anticipated with any project alternative. All proposed construction activities (buildings, roads, etc.) are located at elevations above the 716.75-foot elevation (1993 flood level). Consequently, no encroachment upon the regulatory floodplain limit of 713 feet would occur with any alternative.

5.4 Social Environment

5.4.1 Recreation

One of the roles of the Coralville Lake project is to provide recreational benefits to the surrounding communities and the region. This section evaluates the impacts that the proposed alternatives would have on the provision of recreation facilities and services to the area.

Alternative 1: MYCA Lease would provide a recreational resource as specified in the 1977 Corps Master Plan at the 106-acre site. This tract was formerly a camp and has been part of the Corps' provision of intensive recreation use on over 3,800 acres of land around the reservoir (U.S. Army Corps, 1977). Continuation of this use is consistent with the Corps' recreational goals. The proposed activities at the MYCA camp would also be consistent with other recreational activities taking place at the reservoir including camping, education, boating, swimming, and hiking. The camp would provide an additional recreational facility at the Coralville Lake project and a retreat center, which could be used by the regional community. This alternative would provide recreational benefits in terms of camping opportunities at a rate of 136 users/day or about 9,500 user-days a year, over a 10-week camping season. No significant detrimental impact on regional recreation would occur with this alternative. However, significant positive impacts in terms of recreational opportunities on the site would be experienced.

Alternative 2: Reduced Use is consistent with the 1977 Corps Master Plan designation and goals for the site, but would serve fewer recreation users than would Alternative 1. The site would continue to be used for camping and would foster various other recreational activities such as outdoor education, boating, swimming, and hiking. In terms of recreational benefits, this alternative would serve approximately 61 users/day during a 10-week season, thereby providing about 4,300 user-days during the camping season. The camp would provide an additional recreational facility at the Coralville Lake project that would benefit the regional community. No significant adverse impact to recreation would occur with this alternative. However, significant positive impacts in terms of recreational opportunities on the site would be experienced.

Alternative 3: Alternate Use is a less intensive recreational use at the site than is specified in the 1977 Corps Master Plan, and is, therefore, not consistent with the Plan. Under this alternative, the site would still be maintained for recreational purposes such as hiking and interpretive use; however, it would serve fewer recreational users (i.e., about 1,500 users per year) and provide much less intensive recreational activities than would be experienced under Alternatives 1 and 2. Use levels for this alternative are difficult to estimate and are somewhat contingent on the extent to which the facility is promoted for use

(e.g. with school groups, birding clubs, etc.). No significant impacts to recreation are anticipated with Alternative 3; however, the proposed facilities at the site would enhance area recreational resources.

No planned or formalized recreation activity would take place at the site under Alternative 4: No Action. However, the area is part of the Federal project lands and is available for public use. No environmental impacts are anticipated under this alternative; however, this alternative doesn't meet the criteria for high intensity recreational use as set forth in the Corps' Master Plan and would not be consistent with the Corps' objective to provide a nonprofit group recreation area at this location.

5.4.2 Land Use

The assessment of impacts to land use consists of the evaluation of the project alternatives with regard to potential impacts to local and regional land use planning. Local and regional plans include the 1977 Corps Master Plan, the 1998 Johnson County Land Use Plan, the Johnson County Zoning and Subdivision Regulations, and the 1996 Johnson County North Corridor Plan. Impacts to land use relate to the formally adopted planned use of a property, the adopted goals and policies for the planned uses proposed, and the compatibility of adjacent land.

The lake was developed in 1958 for flood control, although it is now managed to fulfill a multi-purpose role, providing recreational opportunities as well as fish and wildlife management. The Corps has maintained lakeshore and property adjacent to the lake and has managed it according to the 1977 Coralville Lake Master Plan, which specifies Corps "zoning" and objectives for various parcels. Specific resource objectives of the 1977 Master Plan include the provision of "high quality diversified public outdoor recreation opportunities." The Corps has applied zoning classifications to all lands above the conservation pool. These classifications were established in the original 1961 Corps Master Plan as priority uses. The Corps' zoning for the site is "Recreation/Intensive Use" which is described in the 1977 Revised Corps Master Plan as follows:

> Operations: Recreation/Intensive Use lands are those allocated for developments as public use areas for intensive recreational activities, including areas for concession and quasi-public development.

Alternative 1: MYCA Lease proposes the development of a recreational facility in an area designated by the 1977 Corps Master Plan for intensive recreational use. In addition, the site has been identified by the Corps as an outgrant property since 1964, prior to the development of adjacent single-family residential units. The site was formerly used as a Girl Scout camp from 1966 to 1991. The recreational use proposed by MYCA at the site is consistent with the Corps' intended use of the property as well as the previous use of the site.

In the north central area of Johnson County, the predominant land feature is Coralville Lake. The north corridor of Johnson County has experienced rapid single-family growth in close proximity to Coralville Lake and Corps property in recent years. Although the Corps property around Coralville Lake is Federally owned and exempt from local planning and zoning regulations, consideration of its use has been given in the County plans. Areas near the recreational lands owned by the Corps are planned for suburban residential uses.

As shown in Figure 4-3, the Johnson County North Corridor Land Use Map designates the site for flood plain and suburban residential uses. Johnson County has zoned the site and other Corps property as A3-Flood Plain District and surrounding property as RS-Rural Suburban District (Johnson County, 1960, as amended; 1996).

Although the local government does not have planning and zoning jurisdiction over the site, the County's A3 zoning designation permits private recreational uses. The County's zoning of this site in conformance with the Corps Master Plan indicates that the County considered the Corps Master Plan when zoning property surrounding the reservoir. Recreational uses are compatible with low density residential uses, as

indicated by the County's planning and zoning policies, which identify single-family residences as an appropriate land use adjacent to Corps recreational developments.

With respect to the current land use and zoning, Alternatives 1 and 2 are considered to be compatible with both the 1977 Coralville Lake Master Plan as it designates the site for recreation/intensive use including concessionaire development. The A3 Flood Plain zoning applied to the site by Johnson County shows consistency with local land use policies since this zoning district allows private recreation uses as a permitted use. Consequently, no significant impacts to land use or zoning are anticipated with these project alternatives.

Because the Corps Master Plan designates the project site for recreation/intensive use and the site is currently not being used for recreation, neither Alternative 3: Alternate Use or Alternative 4: No Action would be consistent with the Corps' intended use of the site.

5.4.3 Community and Regional Growth

Potential impacts to both community and regional growth may be assessed in terms of potential changes in business and industrial growth, employment, and labor force. Impacts to business and industrial growth are generally evaluated in terms of economic impacts to the local and regional economy. These impacts can be in the form of direct impacts, which produce immediate measurable changes, or indirect impacts, which are those that result in some measurable net change in economic activity over time as a result of the project. Employment impacts are measured in the form of jobs lost and jobs generated by the alternatives.

Potential impacts to business and industrial growth from Alternative 1: MYCA Lease, may be evaluated in the form of employment and dollars spent on the construction and operation of the facility. Under Alternative 1, MYCA is proposing to spend $1.45 million on the facility and $185,400 annually on food and supplies. These costs represent direct economic impacts to the local and regional economy (MYCA, 1999).

While construction employment would be a direct consequence of the construction of the proposed facility, construction employment and payroll would also generate indirect impacts as a result of payroll dollars being spent. Utilizing accepted practices contained in the U.S. Department of Commerce manual entitled "Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)", it is possible to estimate these secondary impacts. Multipliers are used to determine the overall changes to the economy from a capital investment. Based on multipliers developed by the U.S. Department of Commerce, construction of the MYCA Lease Alternative would result in a statewide change in output of $2,982,360 and an annual statewide increase in employment of 105 workers during construction of the facility. In addition, operation of the facility would result in an annual statewide increase in output of $336,315. These impacts would be experienced throughout the economy, but would be greatest in sectors related to construction and lodging. MYCA anticipates construction to occur over two years; therefore, construction impacts are short-term.

Employment and labor force impacts resulting from Alternative 1: MYCA Lease would be in the form of construction employment during the first year and, subsequently, direct employment needed for operation of the facility. This alternative also specifies that a full-time caretaker, camp counselors, and summer interns would be employed at the facility. Based on information from MYCA, a total of 16 persons would be employed at the facility during full operation. This employment level would not impact overall employment in the immediate area or region. Additionally, these positions are non-skilled labor and would not impact the regional supply of skilled labor.

Alternative 2: Reduced Use would have approximately half the number of users of the site and half of the facilities as compared to Alternative 1: MYCA Lease. Therefore, community and regional impacts associated with this alternative are assumed to be 50% of those impacts associated with Alternative 1. These impacts are summarized in Table 5-5.

Alternative 3: Alternate Use would not involve building construction, organized camping activities, or employment. A small parking lot and a vault toilet would be constructed for visitors using the site. Minimal temporary employment impacts would occur as a result of this construction. However, it can be assumed that no significant economic impacts would be associated with this alternative.

Alternative 4: No Action would not result in any change in the current use of the site. Therefore, no impacts to community and regional growth would occur under this alternative.

Table 5-5. Summary of Impacts to Community and Regional Growth

	ALTERNATIVE 1: MYCA LEASE	ALTERNATIVE 2: REDUCED USE	ALTERNATIVE 3: ALTERNATE USE	ALTERNATIVE 4: NO ACTION
Statewide Change in Output Due to Construction	$2,982,360	$1,491,180	$308,520	0
Temporary Jobs Created	105	53	5	0
Annual Statewide Change in Output Due to Operations	$336,315	$168,158	0	0
Permanent Jobs Created	16	8	0	0

Source: U.S. Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis, "Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)"
MYCA, 1999

5.4.4 Community Cohesion

Cohesion is commonly defined as "those behaviors or perceptual relationships that are shared among residents of a community that cause the community to be identifiable as a discrete, distinctive geographic entity within the urban pattern. These shared behaviors and feelings bind the community together as a *cohesive* grouping. Cohesion manifests itself in such behavior as: (1) participation in community organizations, (2) neighborhood socializing, and (3) by the use of community facilities. Perceptual manifestations of cohesion include: (1) psychological identification with the neighborhood or community, (2) commitment to it over time, and (3) positive feelings or evaluations concerning it" (FHWA, 1977).

Issues to consider when evaluating if a project would impact community cohesion include:

- Potential changes to the neighborhood,
- Potential substantial change in population of the community or neighborhood,
- Potential segmentation or separation of part of the neighborhood or community,
- Potential change to income distribution,
- Potential relocation of residents,
- Potential environmental impacts that would alter the quality of life, and
- Potential changes to employment.

These issues were examined with respect to each of the alternatives. Because the proposed alternatives would occur away from the neighborhood and would not physically divide or disrupt the adjacent neighborhood or cause the relocation of residents, it was determined that there would be no impact to community cohesion. As proposed, none of the alternatives would affect income distribution or employment.

The Corps site is located approximately two miles north of North Liberty in an unincorporated area that is partially developed with low-density residential housing, but is primarily undeveloped. The Cumberland Ridge Subdivision on the north side of the site contains 17 homes and is the cohesive neighborhood

nearest to the site. Two-hundredth Street NE provides access to this subdivision and would also be used for access to the site for all of the alternatives being studied. The remaining surrounding properties are undeveloped.

Development of Alternative 1: MYCA Lease would not physically divide the neighborhood through access or other barriers and would not, therefore, interfere with the cohesive nature of this residential subdivision. In addition, all development activities associated with this alternative would take place on the site. Therefore, no impact to community cohesion would occur under this alternative.

Alternative 2: Reduced Use and Alternative 3: Alternate Use are similar to Alternative 1: MYCA Lease in relation to community cohesion. All activities would take place on the site and the development of either alternative would not divide or disrupt the adjacent neighborhood. Therefore, no impact to community cohesion would occur under these alternatives.

Alternative 4: No Action would not result in any change in the current use of the site. Therefore, no impacts to community cohesion would occur under this alternative.

5.4.5 Demographics

This section evaluates the alternatives in terms of their effect on the area's demographic characteristics.

Alternative 1: MYCA Lease proposes the construction of a caretaker's residence on the site. No other permanent residences are proposed. All employees of the camp will be seasonal except for the camp director/caretaker. Most of the seasonal employees, such as camp counselors, would reside at the site temporarily and only during the camping season. They would be housed in cabins built at the camp. As the Muslim population is comprised of people from a variety of ethnic and international backgrounds, youth attending the camp would most likely be multi-cultural. MYCA proposes to attract youth from a regional and national market, while potential use of the lodge would be primarily by people from the local and regional population. During the youth camping season, the immediate area would experience a change in both the number and the ethnic background of people living in the area. These additional people would be temporary, changing on a weekly basis, while attending the camp. All camp participants would stay on the site except for off-site activities such as educational outings. Due to the limited number of camp attendees, as a percentage of the area's total population, and due to the transient nature of the campers, no significant impact to the area's demographic composition is anticipated under this alternative. Conference, retreat and wedding attendees would also be temporary, and in many cases would result in an attendance period of less than one day. Additionally, it is anticipated that a significant portion of the attendees would come from the surrounding region. There is no significant impact to the area's demographic composition due to this aspect of the proposal.

Alternative 2: Reduced Use does not propose the addition of a caretaker residence. About one half as many campers and staff would use the site as compared to the MYCA proposal. Under this proposal, the lodge would not be used for retreat or conference activities. Since no specific lease applicant is known at this time, changes to the demographic character of the area cannot be assessed. No significant impacts to the area's demographic character are anticipated under this alternative.

Alternative 3: Alternate Use would not entail any persons living at the site. Activities at the site would be minimal and would not involve overnight stays. Therefore, no impacts to area demographics would occur under this alternative.

Alternative 4: No Action would not result in any change in the current use of the site. Therefore, no impacts to area demographics would occur.

5.4.6 Displacements

Displacement is the relocation of individuals, households, businesses, farms, or structures, which result from an action such as a government project.

Development associated with each alternative would take place on the existing site, and would not cause the displacement of homes, businesses, community facilities, farms, or other developed land uses. Therefore, no displacement impacts would occur.

5.4.7 Property Values and Tax Revenues

Property value and tax revenue impacts result from improvements to the site, which increase the site's real estate value. Increases or decreases in property values affect revenues for taxing districts. The 106-acre tract of land is owned by the Federal government and is, therefore, tax exempt property. In accordance with guidance for outgrants which state that they should be with "not for profit groups", it is anticipated that the lessee is a not for profit and therefore is tax exempt. Upon negotiation of the lease, the lessee would apply for tax exempt status. Any improvements to the site from any of the alternatives would remain tax exempt.

Development of Alternative 1: MYCA Lease would not have a direct impact on the property tax base of Johnson County due to the tax exempt status of the property. In addition, MYCA is a nonprofit organization that also holds a tax exempt status. Any goods or materials purchased by MYCA for the construction or operation of the facility would also be exempt from state and local sales taxes. Visitors to the facility could affect sales tax revenues through purchases of such items as fuel or food. These purchases would most likely be made in Johnson County; however, increases in sales tax revenues from these purchases would be minimal.

Neighboring property owners have expressed concerns that the location of the MYCA facility near their property could result in diminution of property values in the area. Alternative 1: MYCA Lease proposes that all development and the majority of camp activities, including lodging and education, would take place on the south side of the site. Development would be situated approximately 400 feet through a wooded area from the residences on Scenic Drive (Cumberland Ridge Road). This physical barrier also includes topographical changes where a ridgeline in the wooded area would also serve as a buffer. The separation provides both a visual and a significant physical barrier between the neighborhood and the camping facilities, thereby reducing both noise and visual impacts.

Access to the site would be provided via 200th Street NE. Vehicles destined for the site would not travel through the neighboring subdivision. However, one home located on 200th Street near the entrance to the facility would experience some increased traffic in its proximity.

The site has been identified as an outgrant area by the Corps since the 1964 Coralville Lake Master Plan. Since this time, the Corps has not changed the planned use of the property, which is designated as recreation/intensive use (Figure 4-3). The residential area north of the site has been developed since the plan was adopted. The proposed development would be adequately buffered from the neighboring residential area to prevent interference from noise, visual impacts, and traffic. In addition, there is no change in the uses planned for the site. Therefore, there is no indication that the development of the property in a manner consistent with the Coralville Lake Master Plan would have a significant impact on property values in the area.

Alternative 2: Reduced Use also entails the operation of the facility by a nonprofit organization. As with Alternative 1: MYCA Lease, impacts to tax revenues would be through outside spending by visitors to the camp, and would also be minimal. Development on the site would be on a smaller scale and occur primarily on the south side of the site as proposed in Alternative 1. Adequate buffers from neighboring residents would be maintained. Increased traffic in front of the residence on 200th Street NE would be experienced; however, minimal traffic increases would be anticipated. The Reduced Use proposal is also consistent with the Coralville Lake Master Plan. Therefore, no impacts on property values in the area are anticipated.

The status of the site would remain unchanged under Alternatives 3 and 4. The property would be operated by the Corps, resulting in no impacts to property values and tax revenues.

5.4.8 Public Facilities and Services

Public facilities and services include organizations, both public and private, which provide goods and services to the community such as schools, churches, hospitals, and parks. Emergency services are discussed in Section 5.4.9. The impact analysis involves the determination of how the alternatives affect access and use of these facilities and services. Other than Coralville Lake, there are no public facilities located within the area around the site.

Access to or use of public facilities and services would not be affected by Alternative 1: MYCA Lease. The 1981 Corps Lakeshore Management Plan for Coralville Lake specifies that one of the policies of the Corps is to manage and protect the shorelines of all lakes under it's jurisdiction and to "promote the safe and healthful use of the shorelines for recreational purposes by all of the American people. Ready access to, and exit from, these shorelines for the general public shall be provided …". Property owners in the area have expressed concerns that development of the MYCA facility would prevent public access to Coralville Lake. As specified in the sample lease agreement (Appendix D) the lessee under either Alternative 1 or Alternative 2 will "not forbid the full use by the public of the water areas of the project…" However, the lessee will have the authority and responsibility to "manage the premises and provide safety and security to the facility users."

The Reduced Use, the Alternate Use, or the No Action Alternatives would not affect access to or use of public facilities and services.

5.4.9 Life, Health & Safety

Life, health and safety issues relate to the operational safety of the proposal and delivery of emergency services to the development.

Emergency services for Alternative 1: MYCA Lease would be provided by the North Liberty Fire Department and the Johnson County Sheriff's Department which presently serve the area. The area served by the North Liberty Fire Department includes approximately 10,000 people. The MYCA Lease Alternative would serve approximately 136 persons per day during the summer camping season. The addition of approximately 1% of the area's current service population would not impact the continued ability to provide emergency services. No significant increase in emergency response calls would be anticipated. Water in the area is provided by wells as no water system is available in the area. Consideration of adequate water supply for potential fire fighting capabilities would be required as part of the overall design of the proposed structures and site. MYCA camp personnel would instruct campers about the natural hazards of the camp and how to respond to them. Camp personnel would also be trained in all safety procedures including first aid and CPR. Camper safety awareness programs and training of camp personnel are expected to minimize the need for emergency services. The minimal services that may be required are not expected to adversely impact the availability of these services to the area or region.

Emergency services for Alternative 2: Reduced Use would also be provided by North Liberty Fire Department and the Johnson County Sheriff's Department, which presently serve the area. The addition of 61persons per day at the site over a 10-week period is not expected to have a significant impact to the area's continued ability to provide emergency services. Camp staff would be responsible for safety instruction and procedures associated with the operation of the camp and camp activities. Camper safety awareness programs and training of camp personnel are expected to minimize the need for emergency services and the minimal services that may be required are not expected to adversely impact the availability of these services to the area or region.

Emergency services for Alternative 3: Alternate Use would involve very little activity at the site. However, the North Liberty Fire Department and the Johnson County Sheriff's Department would handle emergency response. No significant impact to the provision of emergency services would be experienced with this alternative.

Emergency services for Alternative 4: No Action would not result in any change in the current use of the site. Therefore, no impacts to life, health, and safety would occur under this alternative.

5.4.10 Traffic and Parking

Traffic Generation

Expected average daily traffic volumes of 45-50 vehicles per day (vpd) generated by activities proposed under Alternative 1 will increase the traffic along 200th Street NE from 136 vpd to 186 vpd (up to a 37 percent increase) and along Scales Bend Road immediately south of 200th Street NE from 840 vpd to 890 vpd, (up to a 6 percent increase). These vpd estimates are below the performance standards of 300 vpd and 1,000 vpd recommended by Johnson County for roads similar to 200th Street NE and Scales Bend Road, respectively. In contrast, Alternative 2 is expected to increase ADT by approximately 22-25 vehicles per day, resulting in a respective increase of up to 18 percent and 3 percent on these same roadways. While ADT projections are useful in assessing changes in daily traffic volumes, they have limited use in determining potential impacts from each alternative during busier times of the day (i.e., peak hours). Peak hour trip generation and Level of Service (LOS) are appropriate measures of traffic impacts. The following discussion integrates a consideration of these measures to assess overall effects of each alternative on traffic and parking. Additional detail is provided in Appendix F: Supplemental Traffic Analysis.

Alternative 1: MYCA Lease. According to the Institute of Traffic Engineers' (ITE) Trip Generation Manual, the a.m. traffic generation rate for campgrounds is 0.27 vehicle trips per occupied campsite. Based on the MYCA site plan of 12 tent-pad sites and 11 multi-use cabins (10 cabins plus the caretaker's residence), if all were occupied, the a.m. peak hour number of vehicle trips generated would be 6.21 vehicles per hour, a rate similar to that of 8 single-family homes. Alternative 1: MYCA Lease proposed that average daily traffic would be 45 vehicles per day plus 2 to 4 bus trips per day, which is less than the ITE rate for daily trips to a campsite. This reduced ADT would result in a peak hour vehicle trip number that would be lower than the 6.21 rate calculated using ITE criteria. The addition of 6.21 vehicles during the a.m. peak hour period would have no appreciable impact on the local road system. Additional detail is provided in Appendix F: Supplemental Traffic Analysis. The central lodge proposed by MYCA could attract more traffic during special events. However, it is unlikely that this would be peak hour traffic, and the total potential peak hour traffic associated with these events should be offset by the amount of peak hour traffic the camp would lose during the off-season.

A total of 66 on-site parking spaces would be provided under Alternative 1, including 52 spaces at the central lodge, 10 spaces adjacent to the campground area and four spaces at the caretaker's residence (two spaces in the driveway and an additional two spaces adjacent to the driveway). While this parking capacity should be adequate for most camp activities (due to staggering of arriving and departing campers over a three-day period), it would not be adequate for special events. If activities on the premises require additional parking space, the applicant would be responsible for providing the necessary additional parking at another location. However, because its location has not yet been identified, impacts associated with this parking area cannot be addressed at this time. In the event that the potential lease applicant is unable to provide an off-site parking facility, usage of the on-site facilities would have to be limited to a level supportable by on-site parking facilities.

Alternative 2: Reduced Use. Traffic generated by the development of facilities proposed under Alternative 2: Reduced Use would be primarily during off-peak hours during the summer months and would have no appreciable impact on the local road system. The a.m. peak hour trip rate of Alternative 2: Reduced Use was based on a 50 percent reduction in the a.m. peak hour trip rate for Alternative 1: MYCA lease, or approximately 3 trips. A total of 33 on-site parking spaces are proposed under this alternative, including 26 spaces at the lodge and 7 spaces within the campground area.

Alternative 3: Alternate Use. Alternative 3 is not anticipated to result in significant changes or impacts to the local transportation infrastructure or to traffic characteristics. Approximately two (2) trips during the peak hour were estimated for this alternative. Five (5) parking spaces have been indicated at the entrance to the site.

Alternative 4: No Action. Alternative 4 is not anticipated to result in any changes or impacts to the local transportation infrastructure or to traffic characteristics, as there would be no change from the current incidental and intermittent use of the site.

Road Capacity Analysis
The Highway Capacity Manual, published by the Transportation Research Board, is used to determine capacity of a roadway under a variety of conditions. It uses a grading system, A through F, with Level of Service (LOS) A representing the best operating conditions and LOS F the worst. LOS C is considered acceptable in rural areas. Chapter 8 of that manual specifically deals with rural two-lane roadways. Based on an analysis contained in Appendix F, a LOS on Scales Bend Road was determined by utilizing the peak hour trips identified above, and adding on six trips in the peak for Alternative 1, three trips in the peak for Alternative 2 and two trips in the peak for Alternative 3. An additional 86 trips for an even 200 peak trips were also added to evaluate the impact of continued residential development on LOS. The results indicated a LOS of B for existing conditions, and a LOS B for Alternative 1, Alternative 2 and Alternative 3. The addition of 115 residences to Alternative 1 trips results in a LOS C. Because some of the site-specific data was not available, the analysis required a variety of assumptions. Based on a conservative approach, the actual LOS is probably better than that calculated. This is evident in the higher speeds observed by the County on Scales Bend Road, with very little delay occurring in the corridor. The higher speeds, in fact, suggest that the roadway's current geometric design is better than that for which it is currently designed.

Based on the analysis contained in Appendix F, the total number of trips generated from any of the alternatives would have a negligible impact on both the capacity and the level of service of the roadway system. The trip generation is low, especially when compared with the number of trips generated by residents of the zoned 3-acre single family housing units located on adjacent properties. From a traffic analysis perspective, the few peak hour trips associated with even the highest use alternative, Alternative 1: MYCA Lease, would not create a noticeable change in the adjacent roadway LOS.

No evaluation of the accident rate has been conducted, due to the fact that no accidents have been recorded in recent years at the 200th Street NE/Scales Bend intersection and only 31 accidents were recorded along Scales Bend Road over a 12-year period. As indicated earlier, observations of traffic along Scales Bend Road, by Johnson County, indicate that very little delay is occurring along this road. These apparent low accident rates and observations suggest that the road's current geometric design is better than what it is currently signed at. For these reasons, no additional traffic control appears to be necessary at the intersection of 200th Street NE and Scales Bend Road. Consequently, it is extremely unlikely that the small amount of additional traffic associated with these alternatives could significantly impact the overall accident rate on Scales Bend Road or at the 200th Street NE/Scales Bend Road intersection.

5.4.11 Aesthetics
The evaluation of aesthetics relates to the potential visual impacts resulting from the project. The visual resource is the existing site and the view of it from neighboring properties, the lake, and properties across the water.

Alternative 1: MYCA Lease would be developed on the south side of the interior road on the site. Development on the site would include tent platforms, cabins, and a lodge with a prayer tower. These structures would be located approximately 400 feet from the north property line along Scenic Drive (Cumberland Ridge Road) and would be buffered by existing vegetation and tree cover. The development would also be constructed on the south side of the ridgeline at an elevation of 717 msl. The

ridgeline ranges in elevation from 740 to 790 msl. This building location would help to reduce any visual impacts to the residents in the Cumberland Ridge Subdivision. Visual impacts to these residents would be minimal as residents may see portions of the lodge rooftop (39 feet above ground on the lakeside and 29 feet on the inland side) and tower (36 feet above the ground at the top of the dome) during the fall and winter months.

Visual impacts of the project area from the lake would be greater. Because the lodge and cabins would be constructed close to the shoreline, the buildings and tent sites would be visible, with the exception of those that are obscured by trees. In addition, a beach is also proposed near the lodge and campsites. The lodge and beach, in particular, would change the visual character of the currently undeveloped setting. Views of the project area from the lake, the Macbride State Park, and the Macbride Nature Recreation Area across the lake would be altered both during the daytime and at night when lights from the facility may be visible.

Alternative 1: MYCA Lease proposes to minimize as much tree removal as possible in order to preserve the rustic setting and natural value of the site. In addition, this alternative proposes the following architectural objectives and design features in an effort to minimize visual impact:

- the lodge is placed on the lowest possible elevation to integrate it into the landscape, and
- the lodge roofline would bend toward the ridge to provide a lower horizontal profile on the north side of the lodge, thereby reducing visibility from the neighborhood.

While the proposed development represents a change in the visual landscape, this would not constitute a significant aesthetic impact due to the incorporation and integration of the architectural design and site development into the landscape.

Alternative 2: Reduced Use would entail development at the site, although on a smaller scale and would likewise not result in significant aesthetic impacts. Cabins, tent sites, and a lodge would be built near the shoreline. The lodge, under this proposal, would be a smaller facility and would not have a tower. With the smaller structure, it is unlikely that residents in the Cumberland Ridge Subdivision would experience visual impacts from the site even during the winter months. Views of the project area from the lake and properties across the lake, however, would change to some degree.

Alternative 3: Alternate Use would entail the construction of a latrine and a small parking lot at the entrance to the site. Neither of these facilities would impact the existing views of the site from neighboring properties or from the lake.

Alternative 4: No Action would not entail any site development. Consequently, the visual attributes of the site would not be altered.

5.5 Noise

As defined by the Federal Highway Administration (FHWA), noise impacts occur when the predicted noise levels approach or exceed the FHWA noise abatement criteria (i.e., 67 dBA), or when the predicted noise levels substantially exceed the existing noise levels (i.e., greater than 14 dBA above existing). Applicable activity categories for each of these land use types and their respective Federal Highway Administration (FHWA) noise abatement criteria are provided in Table 5-6.

In order to gauge the potential magnitude of impacts associated with this project, noise analyses of base conditions were performed using Traffic Noise Model (TNM), the recently updated traffic noise prediction model used by the Federal Highway Administration. This model was selected as it allows for an integrated modeling of multiple noise sources and it also integrates the effects of terrain, ground surface and distance. A TNM analysis was performed for each representative receptor location described in Section 4-6. Results of this analysis are presented in Table 5-7.

Results of the noise model analyses performed indicate that for each of the project alternatives, predicted noise levels do not exceed the FHWA noise abatement criterion of 67 dBA nor do they demonstrate a

significant (>14dBA) increase over the existing levels. Some minor increases in noise levels were predicted to occur with Alternatives 1 and 2, but in most cases, the magnitude of increase was less than 2 dBA (below detection level by the human ear). This result was primarily due to several mitigating factors between the high use areas and receptors that effectively reduced noise levels. These factors included:

- distance,
- the presence of a high ridge, and
- the presence of a large tree mass.

A noticeable increase in noise was observed in the model results at Receptor 4 where a 5.3 dBA increase was detected. However, even this increase, while noticeable, does not represent a significant impact to the local soundscape.

Elevated noise levels associated with construction activities may occur at the site. These activities would be of short duration and spread over a period of two years. Therefore, the noise associated with these construction activities is not expected to be significant for any of the alternatives.

Table 5-6. FHWA Noise Abatement Criteria for Applicable Land Use Activity Categories

Activity Category	Abatement Criteria [exterior, Leq(h)]*	Description of Activity Category
A	57	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of these qualities is essential if the areas are to continue to serve their intended purpose.
B	67	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72	Developed lands, properties, or activities not included in Categories A or B.

*=Hourly A-weighted noise levels in decibels (dBA).
Leq(h)=the equivalent steady state sound level which in a one-hour period of time contains the same acoustic energy as the time varying sound level during the same period.

Table 5-7. Predicted Noise Levels

RECEPTOR NO.	NOISE LEVEL (Leq in dBA)				
	Existing	Predicted			
		Alternative 1: MYCA Lease	Alternative 2: Reduced Use	Alternative 3: Alternate Use	Alternative 4: No Action
1	30.3	32.1	32.0	30.3	30.3
2	29.6	30.5	30.1	29.6	29.6
3	24.4	26.3	24.8	24.4	24.4
4	23.5	28.8	24.2	23.5	23.5
5	38.1	38.7	38.6	38.1	38.1

5.6 Cultural Resources

All sites documented within the area of potential effect for each of the alternatives under study have been previously determined ineligible for inclusion on the NRHP (R & C #870652050 and 991092031). Recent public comments identified a potential historic trail in the study area. Previous archival research and archeological field investigations that have evaluated the area of potential effect of the proposed alternatives as well as the surrounding area have failed to recover any evidence of such a trail. Therefore, the Corps has determined that the alternatives, as proposed, would have no effect on significant historic properties. This determination was provided to the State Historical Society of Iowa, relevant Federally

recognized tribes, and the interested public by a letter dated October 12, 2000. The SHPO concurred with the Corps' determination by a letter dated November 20, 2000 (R & C # 991052031). No comments were received from other consulting parties regarding the Corps' determination. Therefore, pursuant to 36CFR800.4(d)(1), the Corps has fulfilled its responsibilities under Section 106 of the NHPA for all alternatives under evaluation in this EA.

5.7 Solid/Special Waste

Solid waste generated during operation of the site would be collected at the site utilizing garbage cans and dumpsters. A contract refuse hauler would be responsible for emptying site dumpsters and for proper disposal of the waste materials at an approved landfill. Therefore, no significant impacts are anticipated from solid/special waste at the site as a result of the implementation of any project alternative.

5.8 Manmade Resources

Manmade resources potentially affected by the alternatives under consideration consist of the existing on-site structures associated with the former Camp Daybreak. Under Alternatives 1-3, all structures and facilities associated with the former Camp daybreak would be removed by the Mississippi Valley Girl Scout Council as they are generally in a deteriorating condition. The possible exceptions are the existing picnic shelter and the existing well. These structures will be examined to determine their integrity and the viability of use for Alternatives 1-3. Under Alternative 4: No Action, all structures would be removed. No significant impacts are anticipated with the removal of the existing structures for Alternatives 1-4, since these areas are already in a disturbed condition.

5.9 Secondary and Cumulative Impacts

Secondary Impacts

Secondary impacts associated with a given action are generally considered to be those impacts that are linked to the proposed action but are removed in distance and/or in time. Potential secondary impacts associated with the Alternative 1: MYCA Lease relate to the need for an off-site staging area for parking and the addition of traffic to the existing transportation infrastructure. Use of this facility is expected to be intermittent and dependent upon the activity (e.g., weddings, retreats, etc.). A specific parking lot or shuttle area has not yet been identified; however, such a facility may be expected to be located in the North Liberty area and may result in some localized changes in traffic patterns. Should the construction of a new parking lot be required, it is anticipated that it would result in the conversion of land use and localized impacts to natural resources. Stormwater runoff from such a facility may also result in an increased loading of pollutants to existing storm drain systems. The magnitude of such loading, however, is expected to be minimal.

Additional traffic is also expected on the local infrastructure as a result of each alternative. Land to the west of Scales Bend Road has had a road constructed on it and the developer has submitted a plat to the county. The plat has not been approved at this time. However, as is discussed in Section 5.4.10, the added volumes are sequentially reduced with each alternative (1-4).

No secondary impacts are anticipated to adjacent land uses or natural resources for any of the proposed alternatives under consideration.

Cumulative Impacts

In contrast, cumulative impacts are those impacts which result given consideration with other past, present, and reasonably foreseeable activities (Federal or non-Federal).

Within the context of the project site, no significant actions are on-going or are planned for the foreseeable future that can be assessed in terms of cumulative impact. However, the North Liberty area is recognized as undergoing a significant amount of residential expansion as it serves as a bedroom community to Iowa City. Habitat loss and construction phase erosion and sedimentation are typically associated with such developments, as is an increase in traffic on local transportation infrastructure. Consequently, the land disturbance that is associated with the proposed alternatives under consideration may be evaluated in the context of North Liberty or even within the areas served by Scales Bend Road.

In the latter context, it is known, for example, that there are numerous platted, but undeveloped residential lots that may be subject to development. Such lots are located both immediately to the west of the project site (i.e., Sherwood Forest subdivision) and north of the Cumberland Ridge subdivision along Scales Bend Road. Cumulative impacts associated with the potential future development of these areas would undoubtedly result in the conversion of natural habitats to residential use, displacement of biota, potential erosion and off-site sedimentation, and potential impacts to undiscovered cultural resource sites. Such development would also result in additional traffic on Scales Bend Road and may result in degradation of the pavement and increased accident rates.

In light of the potential cumulative impacts from planned development in the county and area surrounding the project site, and the lack of significant impacts from any of the proposed alternatives, no significant contribution to cumulative impacts in the area are expected from any of the proposed alternatives.

6.0 ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Potential adverse impacts associated with the alternatives that require construction (i.e., Alternatives 1-3) consist of the removal of trees on-site, the conversion of natural habitats and land use to developed resources (e.g., lodge, cabins, parking lots, etc.), and the temporary impacts associated with off-site erosion during the construction phase. The magnitude of such impacts, however, may be expected to be sequentially reduced with each alternative depending on the degree of site disturbance (Alternative 1>Alternative 2>Alternative 3).

Other impacts which may occur with Alternatives 1 and 2 include an increase in noise levels associated with increased activity levels and an increased visibility of the site from Coralville Lake, and from the Lake Macbride State Park and the Macbride Nature Recreation Center (across the lake).

7.0 RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

Each of the proposed alternatives that require construction offers both short-term use while maintaining long-term productivity of the site. In all cases, the site would receive some improvements that would make the site more valuable to recreational users by providing access and programming. However, because the site would be only partially developed, it would continue to represent a long-term valuable natural resource to the system. Investments to the site with each of the alternatives are also expected to be of good construction and subject to regular maintenance such that they will be a resource available for long-term use.

8.0 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF PROJECT IMPLEMENTATION

Irreversible and irretrievable resources used in the development of the facilities under Alternatives 1-3 consist of the raw materials used in the construction of cabins, tent platforms, parking lots, lodge, access road, trails and beaches. Additionally, the construction of such facilities would require the irreversible commitment of fuels and petroleum products that may be required in the delivery or processing of such raw materials to the site. Land areas, as identified in Table 5-1, would also be converted within the foreseeable future to developed uses such as structures and parking areas.

9.0 COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES

Table 9-1 summarizes the relationship of each project alternative with relevant environmental protection statutes and other requirements.

Table 9-1. Relationship of Plans to Environmental Protection Statutes and Other Environmental Requirements*

FEDERAL POLICIES	Alternative 1: MYCA Lease	Alternative 2: Reduced Use	Alternative 3: Alternate Use	Alternative 4: No Action
Archaeological and Historic Preservation Act, 16 U.S.C. 469, et seq.	FC	FC	FC	FC
Clean Water Act (401, 404, WQC)	PC	PC	N/A	N/A
Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.	FC	FC	FC	FC
Coastal Zone Management Act, 16 U.S.C. 1451, et seq.	N/A	N/A	N/A	N/A
Endangered Species Act, 16 U.S.C. 1531, et seq.	FC	FC	FC	FC
Estuary Protection Act, 16 U.S.C. 1221, et seq.	N/A	N/A	N/A	N/A
Federal Water Project Recreation Act, 16 U.S.C. 460-1(12), et seq.	FC	FC	FC	FC
Fish and Wildlife Coordination Act, 16 U.S.C. 601, et seq.	FC	FC	FC	FC
Land and Water Conservation Fund Act, 16 U.S.C. 460/-460/-11, et seq.	N/A	N/A	N/A	N/A
Marine Protection Research and Sanctuary Act, 33 U.S.C. 1401, et seq.	N/A	N/A	N/A	N/A
National Environmental Policy Act, 42 U.S.C. 4321, et seq.	FC	FC	FC	FC
National Historic Preservation Act, 16 U.S.C. 470a, et seq.	FC	FC	FC	FC
River and Harbor Act, 33 U.S.C. 403, et seq.	FC	FC	FC	FC
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, et seq.	FC	FC	FC	FC
Wild and Scenic Rivers Act, 16 U.S.C. 1271, et seq.	N/A	N/A	N/A	N/A
Flood Plain Management (Executive Order 11988)	FC	FC	FC	FC
Protection of Wetlands (Executive Order 11990)	FC	FC	FC	FC
Environmental Effects Abroad of Major Federal Actions (Executive Order 12114)	N/A	N/A	N/A	N/A
Farmland Protection Policy Act	N/A	N/A	N/A	N/A
Analysis of Impacts on Prime and Unique Farmland (CEQ Memorandum, 11 Aug 80)	FC	FC	FC	FC

*NOTES:

a. FC-Full compliance. Having met all requirements of the statute for the current stage of planning (either pre-authorization or post-authorization).

b. PC-Partial compliance. Not having met some of the requirements that normally are met in the current stage of planning.

c. N/A-Not applicable. No requirements for the statute required; compliance for the current stage of planning.

10.0 PUBLIC INVOLVEMENT AND COORDINATION

Agency Coordination Letters
Agency coordination letters were faxed to the U.S. Fish & Wildlife Service, U.S. Environmental Protection Agency, National Resources Conservation Service, Iowa Department of Natural Resources, Iowa Department of Transportation, Johnson County Board of Supervisors, Johnson County Conservation Board, Johnson County Engineer, Johnson County Planning and Zoning Department, Mayor of North Liberty, and the Macbride Nature Recreation Area on June 30, 2000, after final approval by the Rock Island District (Corps). These letters and other correspondence received from agencies are provided in Appendix A. In addition, Coralville Lake Operation and Maintenance activities require ongoing coordination between the Corps, the Iowa State Historic Preservation Office, Federally recognized tribes, and historical societies.

Public Scoping Meeting
A Public Scoping Meeting was held in the Penn Elementary School Gymnasium in North Liberty, Iowa on July 12, 2000. Both an afternoon (2-4 p.m.) and an evening (7-9 p.m.) session were held and there were just over 50 people that attended each session. Zambrana Engineering, Inc. (ZEI) staff present at the meeting were the Principal Investigator (Ken Derickson), Senior Ecologist (Bill Elzinga), Senior Engineer (Dick Rosenberger), Social Scientist II (Connie Heitz) and Junior Biologist (Jessica Jones). Rock Island District staff present at the meeting were the Technical Point of Contact (Karen Hagerty), Coralville Lake Operations Manager (John Castle), Social Science Analyst (Sharryn Jackson), and Real Estate Point of Contact (Wayne Johanson).

Legal ads for the Public Scoping Meeting were placed in the *Cedar Rapids Gazette* and *Iowa City Press-Citizen* on July 3, 2000, and individual notices were sent to over 350 people on July 7, 2000. Additionally, the agency coordination letters contained relevant information on the meeting. Notices were also sent to radio stations KXIC and KCJJ on July 10, 2000 to be included in their daily Public Service Announcements.

The format of the Public Scoping Meeting was an open house with display materials depicting the project site location and features, site environmental resources, NEPA process, EA project alternatives, and the facilities and site plan for the MYCA alternative. A handout providing information on the Coralville EA was given to each attendee and they were asked to complete and return the attached Public Comment Sheet at the end of the meeting. ZEI staff circulated and answered questions from the attendees and discussed their specific concerns. Rock Island District staff provided support and answered questions, as appropriate. Overall the meeting was very productive with a considerable amount of discussion involving a large number of the attendees. Public Comment Sheets were received from 77 percent of the attendees. These comments were reviewed and analyzed and a summary of this analysis can be found in Appendix E: Content Analysis Report Summary. A breakdown of the public comments, by topic category and where these comments have been addressed in the EA, if appropriate, is presented in Table 10-1.

Public Scoping Meeting Follow-up
ZEI received numerous phone calls and e-mails from meeting attendees and from people that received the Public Scoping Meeting Notice but were unable to attend. ZEI responded to these calls and e-mails and kept the Rock Island District informed. The concerns expressed in these phone calls and e-mails were consistent with comments received on the Public Comment Forms and have been addressed, as appropriate, as indicated in Table 10-1.

Table 10-1. A Breakdown of Public Comments by Category

COMMENT	NUMBER	SECTION OF EA WHERE COMMENTS ARE ADDRESSED
1. The streets lack adequate capacity and the MYCA proposal will degrade traffic.	41	5.4.10
2. MYCA proposal represents too high a level of a development for the project site.	38	5.4.2
3. Concerns about wastewater treatment and pollution.	32	5.2.1
4. A wilderness area should be made.	24	5.4.1
5. Concerns about public accessibility to the site.	24	5.4.8
6. Effects on wildlife and species in the area.	22	5.1.2, 5.1.5
7. Concerns regarding the trees that will be cut down for MYCA development.	20	5.1.2, Table 5-2
8. The Corps of Engineers is hypocritical. They should want conservation but instead have this proposal.	14	N/A
9. MYCA will use taxpayers money for road improvement, EMS, etc.	13	5.4.9, 5.4.10
10. Concerns about noise levels.	13	5.5, Table 5-7
11. Area should be recreational area for native Iowans.	12	1.2, 5.4.1
12. Safety issues because of the added number of people on the roads and in the area.	11	5.4.10
13. Concerns for emergency needs.	11	5.4.9
14. Property values will decrease	9	5.4.7
15. The Corps has strict regulations for homeowners but not for MYCA.	9	N/A

11.0 CONCLUSION OF FINDINGS

A total of four alternatives were examined as part of this Environmental Assessment. These included the following:

1. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization, as proposed in the Muslim Youth Camps of America (MYCA) application;
2. Leasing the former Camp Daybreak area for group recreational use and development by a nonprofit organization at a reduced level of development and use;
3. Low density recreational day use of the former Camp Daybreak area under administration by the Corps (no lease); and
4. No action-no current plans for development or lease**.**

Non-Preferred Alternatives

The analysis of all impact criteria indicated that there were no significant environmental impacts as a result of the implementation of any of the four alternatives. However, while not viewed to be significant, there is a recognizable difference in the magnitude of impact between each alternative. In general, the magnitude of impact on the site and the surrounding infrastructure is successively reduced from Alternative 1 to Alternative 4. Alternatives 1 and 2 were also found to be consistent with the Master Plan's designation of the use of the site as high intensity recreation. However, Alternative 2: Reduced Use was recognized as offering a lower level of recreational benefit as compared to Alternative 1. In contrast, Alternatives 3 and 4 provide some recreational use of the portions of the site. However, these alternatives do not meet the criteria for high intensity recreational use of the premises and do not serve the intended use of the land as set forth in the Master Plan.

Preferred Alternative
Alternative 1: MYCA Lease is recommended as the preferred alternative. This alternative was selected for the following reasons:

- finding of no significant impact to environment,
- consistent with project purpose and need,
- consistent with the Corps' Master Plan and designated land use for site, and
- provides increased recreational benefit to the greatest number of users.

However, it should be noted that MYCA or any other applicant proposing the level of use described under this alternative would be required, as a condition of a lease agreement, to obtain all appropriate and applicable approvals and permits including the following:

- Water Quality Certification (Section 401 permit) from IDNR,
- Section 404 permit from USACE, Rock Island, and
- variance from IDNR for wastewater treatment facility siting.

The MYCA Lease and Reduced Use Alternatives do not meet current state standards for the location of wastewater treatment facilities. Development of either alternative would be contingent on a change in state standards (IDNR is currently reviewing these standards) or a variance in the buffer zone requirements. In the event that the IDNR does not issue a variance for either Alternatives 1 or 2, alternative wastewater development proposals that meet the IDNR wastewater treatment requirements should be considered.

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